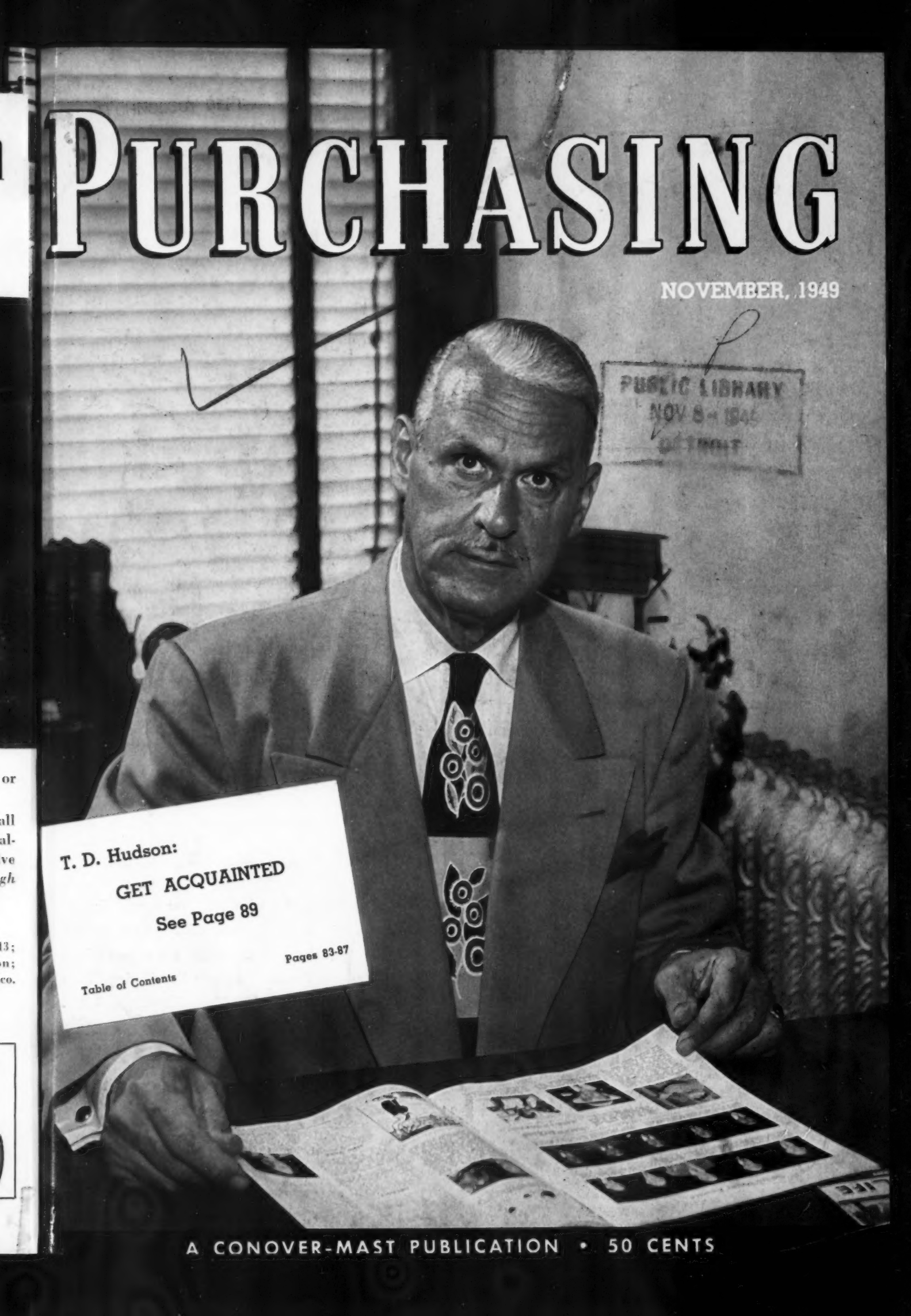
# PURCHASING

NOVEMBER, 1949

PUBLIC LIBRARY
NOV 8 - 1949
DETROIT



T. D. Hudson:
GET ACQUAINTED
See Page 89

Pages 83-87
Table of Contents

A CONOVER-MAST PUBLICATION • 50 CENTS

# Texaco dual-purpose oil makes

# A Substantial Saving

## for the Hoover Company

**A TEXACO LUBRICATION ENGINEER CAN HELP MAKE A SUBSTANTIAL SAVING IN YOUR PLANT, TOO.**



Motor shafts for the famous Hoover Electric Cleaners are produced on this 9/16-inch Acme Gridley automatic screw machine. *Texaco Cleartex Cutting Oil* serves as both cutting coolant and machine lubricant.

In the North Canton, Ohio, plant of the Hoover Company, pioneer maker of electric cleaners, the machining operation illustrated formerly required two lubricants — one for the machine, the other for the cutting tools. End result was contaminated oil that had only scrap value.

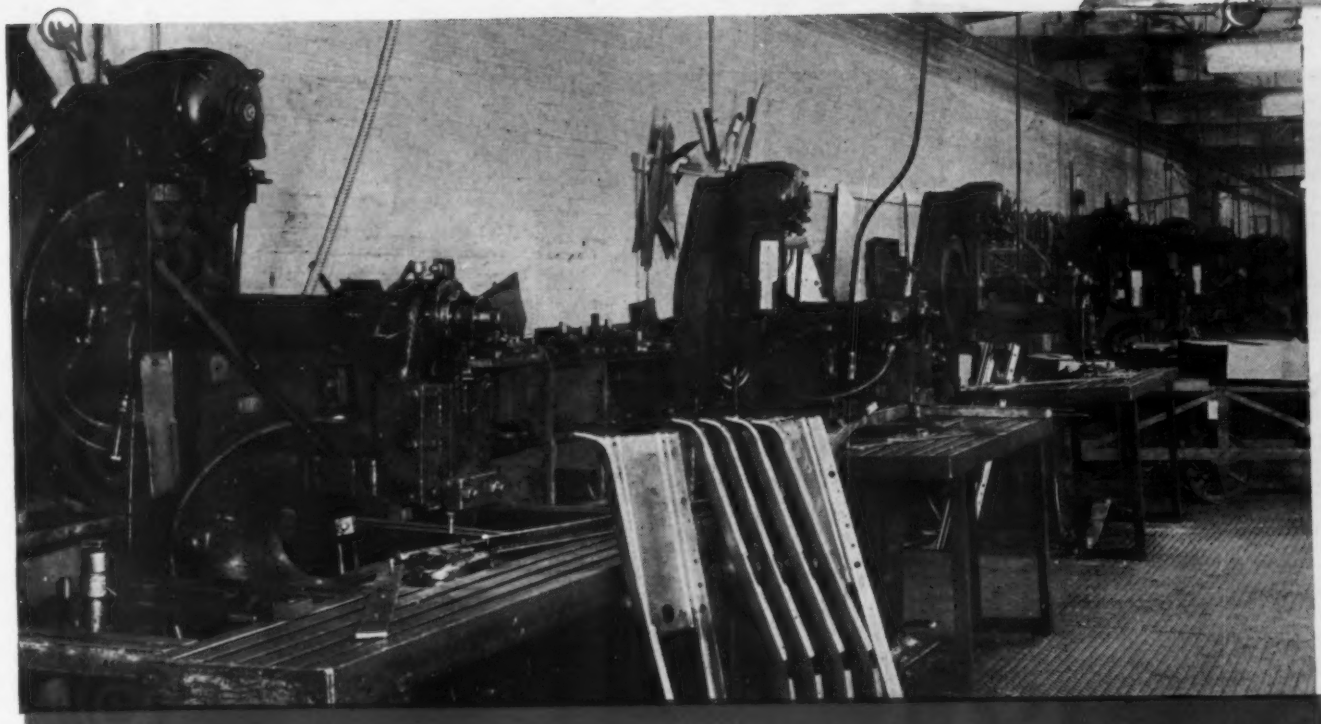
A Texaco Lubrication Engineer recommended *Texaco Cleartex Cutting Oil,* designed to serve as both cutting coolant and machine lubricant. *"By using this dual-purpose oil,"* says The Hoover Company, *"the used oil can now be salvaged at a substantial saving."* In addition, *Cleartex* keeps machining efficiency high, assures excellent finish, prolongs tool life.

*Texaco Cleartex Cutting Oil* is only one of a complete line of Texaco Cutting, Soluble and Grinding Oils designed to do machining jobs better, faster, at lower cost.

Let a Texaco Lubrication Engineer specializing in machining operations help you achieve these benefits on all your metal working. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

**TEXACO Lubricants, Fuels and Lubrication Engineering Service**




# The Correct Century MOTOR Helps Keep Punch Presses on the Job-

## ✓ Maintain High Production at Low Operating Cost



Popular types and standard ratings are generally available from factory and branch office stocks.

The illustration above shows eight Century 1½ horsepower general purpose squirrel cage motors operating small punch presses. The operations performed on these presses are highly repetitive, with comparatively short intervals between strokes—and require a small amount of energy per stroke.

However, for large presses with heavy impact and comparatively long intervals between power strokes, Century offers high torque, high slip, squirrel cage motors. These type SCT motors smooth out the load curve; save wear on the presses.

Century builds a complete line of electric motors in a wide range of types and kinds, in sizes from 1/6 to 400 horsepower.

Specify Century motors for all your electric power requirements.

613

Century C MOTORS

**CENTURY ELECTRIC CO.** • 1806 Pine Street • St. Louis 3, Mo.

*Offices and Stock Points in Principal Cities*


PURCHASING published monthly, by PEEAYE, INC., subsidiary CONOVER-MAST PUBLICATIONS, INC. Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York 17, N. Y. Entered as second class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription rates: United States, U. S. Possessions and Canada: $4 per year, $6 for two years; elsewhere $6 per year, $10 for two years. Single copies 50c. Volume XXVII, No. 5.




# Why B. F. Goodrich water hose lasts up to 100% longer

***Low water absorption, high "wet strength" cord, add years of life***

B. F. GOODRICH water hose is made with rubber compounds that make it highly resistant to water absorption, swelling, carcass damage.

In accelerated laboratory tests B. F. Goodrich water hose absorbed less than half as much water as other brands tested. This means longer hose life, because water can diffuse through to the carcass to cause mildew and mold.

All types of B. F. Goodrich water hose have this longer-lived compound. And all types have "wet strength" cord —specially treated long-staple cotton that actually becomes *stronger* when wetted (where synthetic fibers weaken).

***Tubes***—All grades and types of B. F. Goodrich water hose are fortified with Agerite, the chemical that makes rubber last longer. Most BFG water hose stands hot water; some—creamery hose for example—even take low pressure steam. Specially compounded tubes available to stand water contaminated with acids and other chemicals.

***Covers***—You can drag B. F. Goodrich water hose over wet concrete floors, dirt and cinder yards, use it on highways where it gets run over. It's compounded to take severe abrasion, to resist cutting and gouging. Some covers are compounded to stand oils and greases. Can be made with rubber-capped ends, that protect the carcass from moisture wicking in. Built-in nozzles and tapered ends can be dropped anywhere without doing damage.

If you use water hose don't be satisfied without knowing what developments BFG may have made in hose for your particular type of service. To make sure you get the longest life from water hose, see your local BFG distributor. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

*Water Hose* BY

**B.F. Goodrich**

PUBLIC LIBRARY



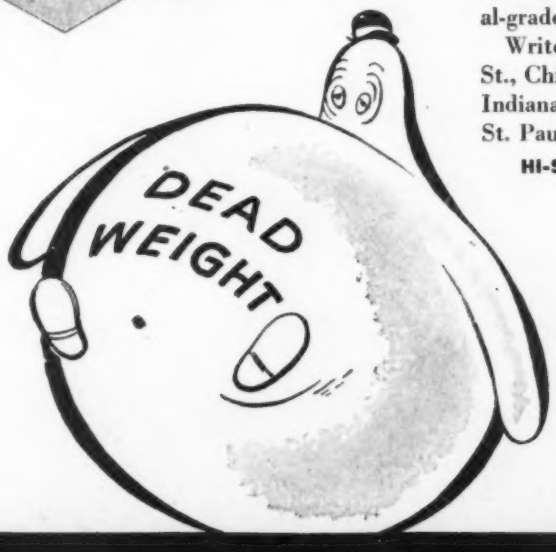
# REDUCE SECTIONAL THICKNESSES

***without sacrificing strength***

## *Squeeze the "DEAD WEIGHT" out of Your Product*

INLAND STEEL




Because of Inland HI-STEEL's superior strength-to-weight ratio, HI-STEEL sections can be up to 25% thinner — and *lighter* — than the same sections made of ordinary structural-grade carbon steel. This means less dead weight and greater efficiency for your product. And, since less steel is used, you can produce one-third more units from every ton of HI-STEEL — at little or no increase in cost per unit. Your lighter HI-STEEL product will last longer, too — for HI-STEEL has about five times the atmospheric corrosion resistance of ordinary structural-grade carbon steel and is far more resistant to abrasion.

Write for booklet. INLAND STEEL CO., 38 S. Dearborn St., Chicago 3, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

**HI-STEEL meets the requirements of SAE Specification 950**

# INLAND HI-STEEL

REG. U. S. PAT. OFF.

**THE LOW-ALLOY HIGH-STRENGTH STEEL**

# 25 ways to CUT DRILLING COSTS!







## Black & Decker Drills give you MORE WORK . . .

**Per MAN** Large or small, all B&D Drills are perfectly-balanced, weight-saving, designed for easier handling. They reduce operator fatigue. They help your men produce better, with the *right* Drill for *every* job—from a matchless choice of 25 different models!

**Per HOUR** Driven by famous B&D-built universal motors, Black & Decker Drills have full power and speed to drill more holes per hour. Their non-stalling, non-stop, accurate performance avoids delays, keeps your work rolling!

**Per TOOL** B&D Drills give you more work for your money because they're built for *extra* years of unfailing service. Extra-tough gears, shaft and chuck spindle, powerful motors and husky housings are all *built to last!*

WRITE TODAY for free detailed catalog to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Md.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS



BLACK & DECKER ½" STANDARD ELECTRIC DRILL $58.00

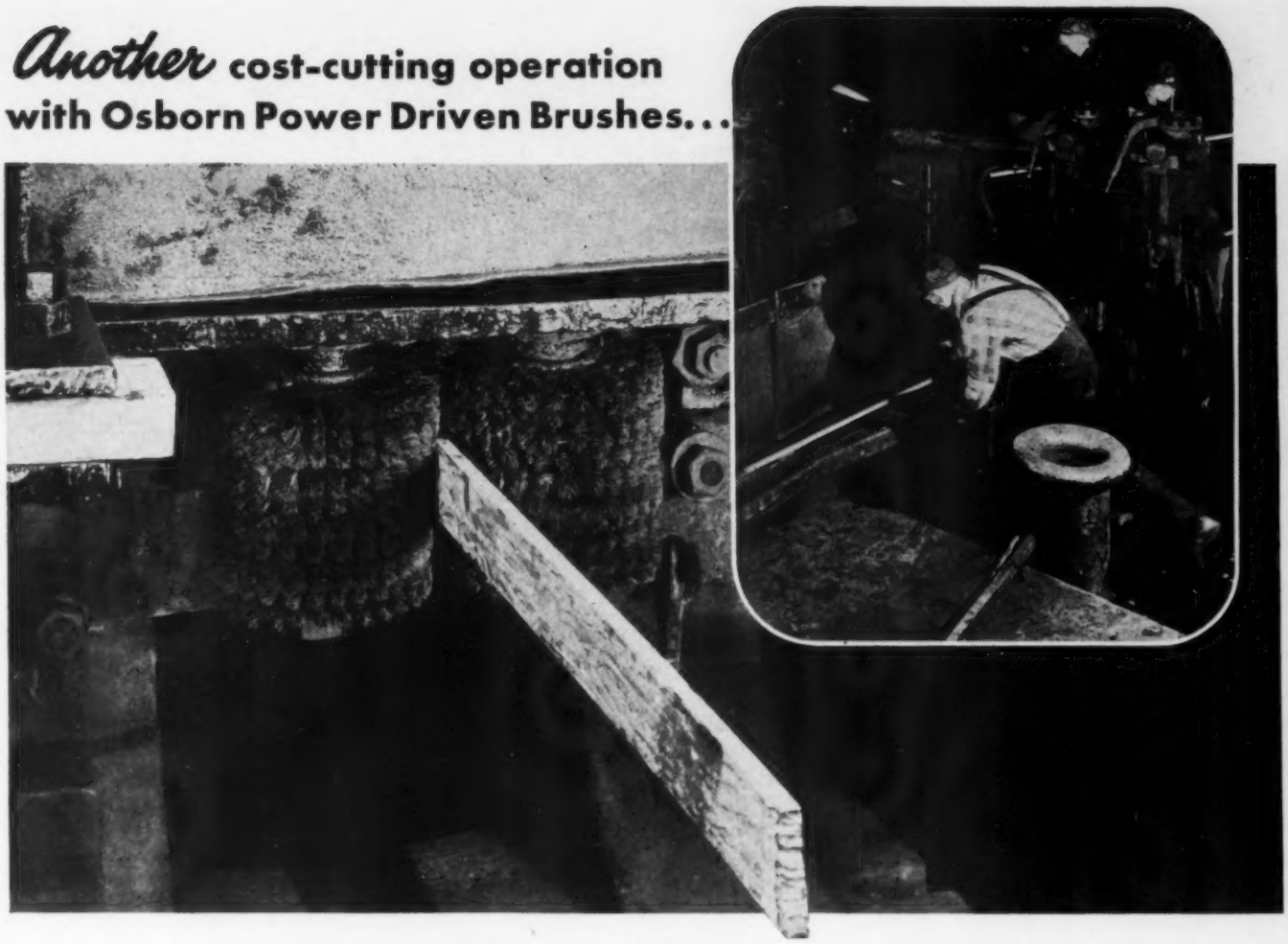
OTHER MODELS FROM ¼" TO 1¼" CAPACITY

DRILL STANDS • HOLE SAWS

**For expert help in COST-CUTTING . . .**

Let your nearby B&D Distributor make an experienced survey of your plant. He'll show you where you can save time and money, cut corners and costs, with the *world's most complete line* of Portable Electric Tools! Phone him today for full information!

## *Another* cost-cutting operation with Osborn Power Driven Brushes...



# *Here's How* to clean mill scale from red-hot steel bars at *12 miles* per hour*

CLEANING red-hot steel bars of scale at speeds up to 1,000 feet per minute, or approximately 12 miles per hour*, is a real production job—requiring real production tools!

And progressive steel mills, intent on improving the quality and appearance of bar stock, are removing secondary heat scale with Osborn Power Driven Disc-Center** Wire Wheel Brushes.

Here's how it's done...fast, economically, thoroughly. Flat pieces of hot steel come through the mill and are run through a machine of special design against the direction of tough, Osborn Disc-Center Wire Wheel Brushes. The steel has a temperature approximating 1900° F. while it threads through the twin set of rotating brushes.

Simple? Of course. Just a matter of combining ingenuity with the right type of Osborn Power Driven Brushes.

Osborn's 57 years' experience in building better brushes for industry is exemplified in hundreds of production operations...cleaning, roughing, deburring, finishing, polishing. There's a wealth of practical cost reduction ideas that are yours for the asking. An Osborn Sales Engineer will gladly show you why power brushes are today's most modern production tools, without obligation. Write or call—

**THE OSBORN MANUFACTURING COMPANY**
*Dept. 214, 5401 Hamilton Avenue* *Cleveland 14, Ohio*

**Osborn Brushes**

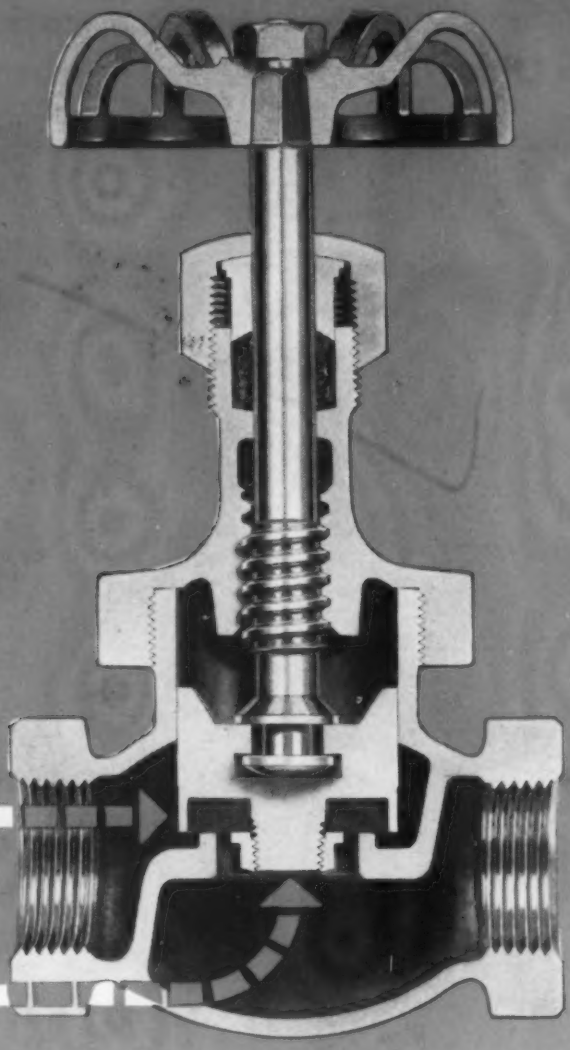
**Trade-mark

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY • POWER DRIVEN BRUSHES • PAINT BRUSHES • MAINTENANCE BRUSHES

# ARE VALVES THROTTLING YOUR PIPELINES HERE

1 ..... AND HERE ?

2 .....



Globe Valves, by their very design, provide some resistance to flow. But valves with undersized ports and discs without full lift can increase this resistance to the throttling point.

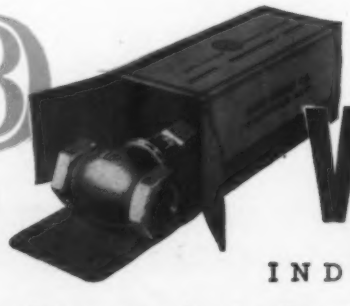
**1** The full lift of the renewable disc gives a flow area capable of handling the maximum flow of the pipe. By clearing the flow path, both turbulence and resistance are kept at a minimum. You don't throttle your line here.

**2** The full-sized, smooth-machined port of O-B's No. 11 Outside Bonnet composition disc valve matches pipe diameter exactly. You don't lose any flow capacity here.

You'll get long-wearing service plus minimum flow resistance with O-B's No. 11. On your next order for 150-lb. W.S.P.--300-lb. W.O.G. valves, specify the No. 11 from your local Ohio Brass distributor.

**OHIO BRASS COMPANY, Mansfield, O.**

3000-V

*Ohio Brass* (B)  VALVES

FOR DOMESTIC AND INDUSTRIAL USE

# WHY IT PAYS TO BUY Riegel WORK GLOVES



**STYLING FOR COMFORT**

**QUALITY CONTROL**

**LONGER WEAR**

**SEALED CONTAINERS**

**PRECISION MADE**

**BETTER VALUES**

**UNCONDITIONALLY GUARANTEED**

The proper styling of a work glove is mighty important. Work gloves may look alike...but Riegel styling will always provide perfect working comfort. We make them from raw cotton to finished glove in a single plant...to assure you of the best in quality, long wear and economy. No other work glove is made in this manner.

Styling for Comfort is just one of many good reasons why it will pay you to buy Riegel Work Gloves. To get the rest of the story, write for our complete free catalog. It shows you how Riegel Gloves are made...with detailed photographs and exact specifications on our entire line. Write to

**RIEGEL TEXTILE CORP., 342 MADISON AVE., NEW YORK 17, N.Y.**

Riegel WAGON BRAND WORK GLOVES

**Riegel WORK GLOVES**

# We can start work on your job today!

## ...if you want parts or products made of *Aluminum* or stainless steel

● We have the materials, facilities and craftsmen to give your order immediate attention as soon as received. Design, details and specifications will be checked or worked out for you promptly, and sufficient metals "ear-marked" for your job to make sure there will be no interruption in the run.

Speedy production, combined with quality workmanship continues to build our reputation for prompt, efficient service. It is this type of service that enables us to serve many of the biggest and most exacting manufacturers in America. It isn't new, or extra-fare. It's just *back to normal!* And it's yours for the asking, *today*. May we talk with you about your needs in aluminum and stainless steel stampings and rolled sections?




If you haven't received your copy of the booklet "Present and Future," please advise us. We will send it by return mail.

**A Contract Placed with Us Expands Your Plant to Include:**

- Machine Shop and Die-Making Facilities
- Four Large Fabricating Plants
- Spacious Aluminum Rolling Mills
- Wide Range of Stamping Presses
- Heat-Treating Equipment
- Gas and Electric Welding
- Complete Finishing Equipment

For *Immediate Attention* Address Inquiries to:

**CONTRACT DIVISION**



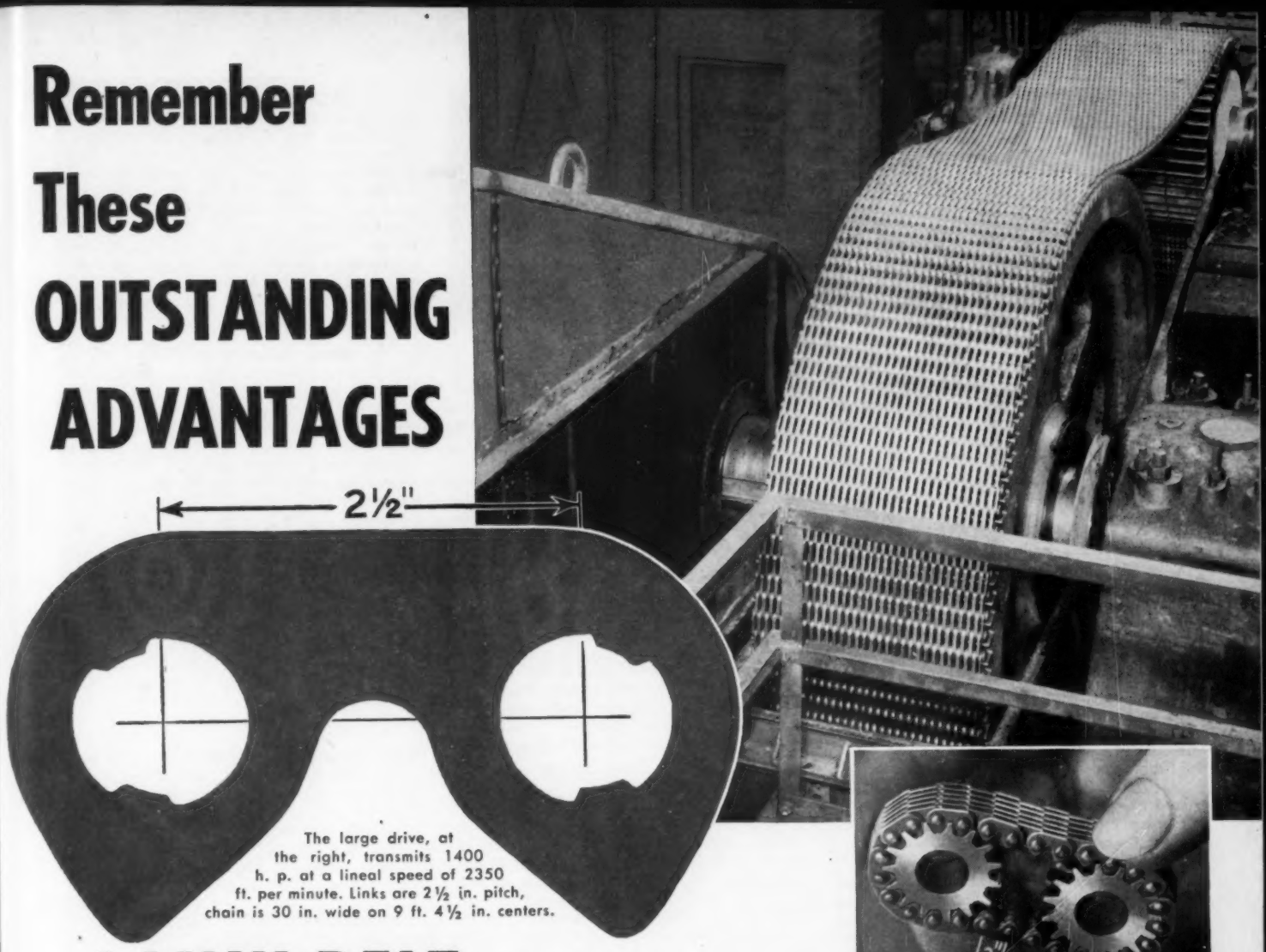

ALSO MAKERS OF
**MIRRO**
The Finest Aluminum Cooking Utensils

**ALUMINUM GOODS** *Manufacturing Company*

MANITOWOC WISCONSIN

FIFTH AVENUE BLDG., NEW YORK 10 MERCHANDISE MART, CHICAGO 54

# Remember These OUTSTANDING ADVANTAGES



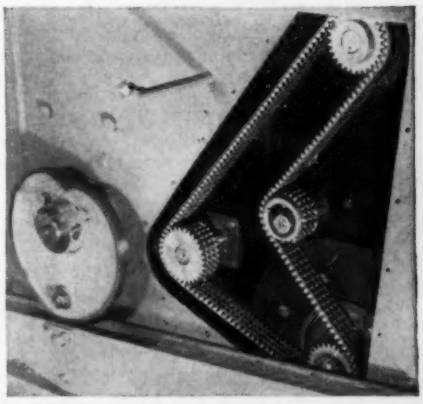

The large drive, at the right, transmits 1400 h. p. at a lineal speed of 2350 ft. per minute. Links are 2½ in. pitch, chain is 30 in. wide on 9 ft. 4½ in. centers.

## of LINK-BELT *Silverstreak* SILENT CHAIN DRIVES

Full production at rated capacity results from eliminating slip in power transmission. With Link-Belt Silverstreak silent chain drives, slip is impossible. Every revolution of the motor is transmitted to the driven machine. Losses due to slippage are eliminated and output is increased. Yet Link-Belt Silverstreak silent chain possesses sufficient flexibility to absorb shock. Even on short centers, it runs slack which minimizes friction and wear. Moisture, temperature, age or periods of idleness have no effect on these all-steel precision-built drives. For utmost efficiency and economy, choose Link-Belt Silverstreak silent chain drives.




Smallest Link-Belt Silverstreak silent chain is 3/16 inch pitch. It has been developed for positive, flexible, quiet, high-speed power transmission at fractional h.p.



Duplex type can be flexed to run on either side for reverse rotation of any shaft.

• • •

Link-Belt Industrial Standard Silent chain drives, chain and sprockets, ½ to 50 h.p. are available from stock at Link-Belt Distributors or Factory Branch Stores in all principal cities. Easy selection tables given in Book 2125-A. Ask for your copy today.

**LINK-BELT COMPANY**

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Houston 3, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities.

11,554

# LINK-BELT

THE SYMBOL OF QUALITY · LB · LINK-BELT

**Power Transmission Machinery**

"THE COMPLETE LINE"




☐ **1. MACHINE TOOLS**—Tools for metal and woodworking are detailed in new 16-pp. catalog published by the Walker-Turner Division, Kearney & Trecker Corp., which illustrates the line of smaller tools made by this company. Four new models listed include 12" band saw, 6" jointer, 9" tilting table saw and a 9" tilting arbor saw.

☐ **2. VIBRATION ISOLATORS**—24-page catalog, profusely illustrated, contains specification charts for the easy selection of the right isolators for various types of machinery. Also included is a discussion of the theory of vibration isolation and shock. Finn & Co.

☐ **3. RIVET HEATERS**—The labor aiding and time saving features of electric rivet heaters are discussed in booklet issued by Cummings Rivet Heater Co. The line includes single electrode electric rivet heaters of the hand, portable bench-duty type, two electrode, three electrode, four electrode and five electrode heaters, the latter being a heavy duty stationary type which is portable by crane.

☐ **4. WATER HEATER**—Bulletin tells about the Hy-Flow heater for producing large quantities of hot water instantly and noiselessly. Unit is built in accordance with ASME-API or ASME Code for 150-lb. working pressure. It can be regulated manually or automatically. The units are made in 9 different sizes with capacity of 3960 to 31,500 gallons per hour. A. Gunthard Co.

☐ **5. MOISTURE MEASURE**—This is a device that tells the moisture condition of soil and saves water by indicating when to irrigate or sprinkle factory or institutional lawns, gardens, etc. One unit will serve 25 to 50 ft. of level ground and may be moved from one place to another as desired. B. F. Klein.

☐ **6. ELECTRICAL**—Plugs, connectors, receptacles and conduit boxes are detailed in bulletin entitled Automatic Locking Midget Ever-Lok, published by Russell & Stoll Co., Inc. Units are for commercial and industrial applications.

☐ **7. BRASS-COPPER Buying Guide**—If you are buying brass and copper you will want one of the Buying Guides available from the Central Steel & Wire Co. Condensed on one side of a printed sheet is **all** of the pertinent specification data for almost 2000 sizes and kinds of brass and copper. The sheet is a condensation from over 40 pages of the company's stock list. It tells what is available in kind, specification, shape, material and size.

☐ **8. SAND CORES**—Technical Data File just published by the Bakelite Corp. describes resin binders for sand cores and the production economies that can be achieved through their use in foundry operations. The file contains bulletins on urea and phenolic sand bonding resins for ferrous and non-ferrous metal castings. Use of the resins makes for shorter baking cycles, smoother surface finish, and minimizes core rejects.

☐ **9. SCREWS**—Clutch Head screws, and how the combination of recess and mating driver substantially lowers assembly costs, are described in bulletin just released by the United Screw & Bolt Corp. Other listed advantages are higher degree of safety for manpower and materials, smoother, speedier operation, and tool economy. Common screwdrivers may also be used.

☐ **10. BUYING ALLOY STEEL**—"How to Specify and Buy Alloy Steel with Confidence" is the title of new 24-page booklet just published by Joseph T. Ryerson & Son, Inc. How the hazards involved in the purchase and use of alloy steel can be minimized or eliminated is discussed under such headings as "How Alloys are Selected", "How to Make Sure of Getting the Right Alloy", and "How to Check for Compliance with Your Specifications." Buyers of alloy steel will find the book of great value.

☐ **11. LOWER CASTING COSTS**—Bulletin 310 tells how the stationary Sandslinger and Speedslinger increase mold production, and reduce cleaning time and scrap losses. Ramming capacities range from 700 to 2700 pounds of sand per minute, and machines serve wide variety of molding arrangements with equal facility. Pictures and diagrams portray equipment and operations in detail. Beardsley & Piper.

☐ **12. SIGNS**—Are you buying signs? "A Primer for Sign Buyers", 8-page illustrated booklet published by the Porcelain Enamel Institute, is designed to provide the sign buyer with helpful information covering such factors as design, location, manufacture, and lighting of outdoor signs.

☐ **13. ABRASIVE SEGMENTS**—Four-page bulletin, No. ESA-188, issued by the Simonds Abrasive Co., explains how segments are used, their advantages, and discusses abrasives and bonds employed. It includes grain and grade recommendations of abrasive segments for both surface grinding and machine knife grinding operations.

☐ **14. CATALOG FOR STEEL BUYERS**—98-page catalog issued by Precision Steel Warehouse, Inc. is designed to give complete specifications on its product, and serves as handy reference guide for steel purchasing agents and others. Extra features include such helps as AISI and SAE steel analyses, glossary of trade terms, decimal equivalent tables, comparative hardness tables, weight tables on coil steel and cold rolled strip steel, etc. Descriptions and specifications are complete on every item listed.

☐ **15. BALL, ROLLER BEARINGS**—New 112-page detailed catalog and data book No. 2550, covering its complete line of ball and roller bearings, is announced by the Link-Belt Co. It points out the important construction features and gives list prices, weight, load ratings and all necessary dimensions for the various standard models available.

☐ **16. HOSE COUPLINGS**—New Le-Hi Hose Coupling Recommendation Wall Chart available from Hose Accessories Co. aids in selecting the right coupling for the job. It is in two colors, and shows the type of hose coupling recommended for various pneumatic tools, high pressure air, water and suction hose, oxy-acetylene welding and low pressure steam spray hose. Its size is 26" x 37", mounted on heavy cardboard.

☐ **17. COLLAPSIBLE TUBES**—Catalog describes Sheffield Process Tubes for a wide variety of products, made from pure tin, Sheffaloy, lead, tin coated (lead case or core) and aluminum; also, Vinicote inner coated tubes for strongly acid or alkaline products, leakable oils, greases and other commodities. The Sheffield Tube Corp.

☐ **18. SELENIUM RECTIFIERS**—New booklet DB 19025 describes Westinghouse standard and high voltage selenium rectifiers for power supplies and electronic circuits. Westinghouse Electric Corp.

☐ **19. RELAYS**—New catalog D-20A issued by Ward Leonard Electric Co. lists stock type industrial and general purpose relays. It includes sensitive relays, midget metal base relays, heavy duty midget relays, midget magnetic relays, heavy duty power relays, thermal time delay relays, and motor driven time delay relays. Electronic Distributor Divn.

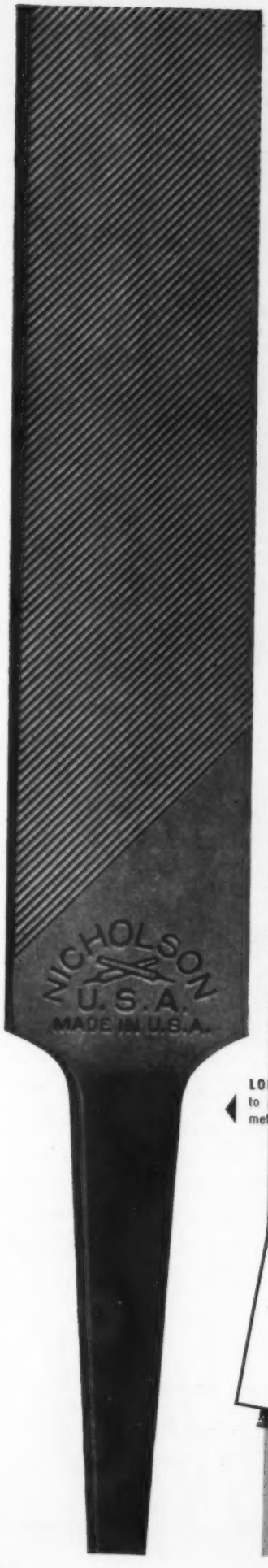
☐ **20. SCREEN CLOTH**—New bulletin "Robins Woven Wire Screen Cloth" has been issued by the Robins Conveyor Divn., Hewitt-Robins, Inc. This new catalog No. 113-A, 16 pages, enables the reader to determine at a glance the sizes of openings available for a given diameter of wire. It includes recommendations on the best wire-diameter to select for a specific type of service. New product is enamel-coated screen cloth which has greatly lengthened screen cloth life in processing coke and substances which have combined corrosive and abrasive action.

☐ **21. DRILLS, REAMERS**—New 48-page catalog issued by Charles H. Besley & Co. covers new line of high speed twist drills and reamers. It includes all standard sizes and types of taper and straight shank regular, three-fluted and four-fluted drills as well as hand and machine chucking reamers.

☐ **22. DROP FORGINGS**—New Catalog No. 51 just issued by Merrill Brothers, contains

(*Please turn to page* 14)

**ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE**
**Three Pages — 12 - 14 - 16**
**Use convenient prepaid postcards on pages 19 & 20**




EACH month *The Saturday Evening Post* readers by the thousands see a Nicholson cartoon ad like this which helps to make "Nicholson" the most widely remembered name in files. But industrial production heads and workers know these famous files for their *practical* qualities . . . for having all the essential requisites of "the perfect file," to wit:

- **STRAIGHTNESS**—for holding the filing stroke "to the line" when necessary.
- **ACCURATE CUT**—teeth of even height, sharpness and spacing to assure full, smooth bite.
- **UNIFORM HARDNESS**—to avoid "skips-and-grabs" and uneven wear.
- **PROPER BALANCE**—for steady filing strokes.
- **GOOD STEEL**—for long file life.

No wonder the world's largest file manufacturer can guarantee you *Twelve perfect files in every dozen!* No wonder leading industrial distributors prefer to recommend and sell you the Nicholson brand—or its twin, Black Diamond! Write to us for:

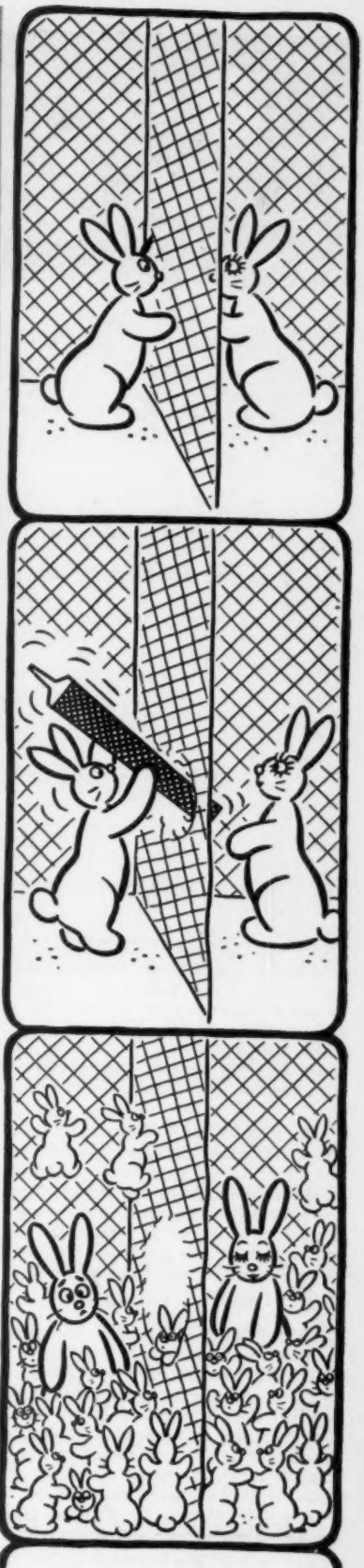
**FREE TECHNICAL BULLETIN** on ten Special Purpose files to help assure you *The right file for the job.* **FREE BOOK, "*FILE FILOSOPHY*"**—the Nicholson "textbook" on kinds, use and care of files (sixteenth popular edition).

**NICHOLSON FILE CO.**, 23 Acorn Street, Providence 1, R. I.
*(In Canada, Port Hope, Ont.)*

# NICHOLSON FILES *FOR EVERY PURPOSE*

**LONG ANGLE LATHE FILE** to produce a fine finish on metal being turned in a lathe.

## Things you need in the files you use



**a Nicholson file for every purpose**

Accurately cut, perfectly balanced, uniformly hardened. Made by the world's foremost file manufacturer.

NICHOLSON U.S.A. and BLACK DIAMOND TRADE MARK



*Want Additional Product Information? See Page 19.*




(*Continued from page* 12)

wealth of technical information, tables, drawings, and data on forgings and constitutes a valuable reference book for the purchasing agent and others. It contains information on the company's facilities, Where and How to use Drop Forgings, Turnbuckle data, Clevis Nut data, Drop Forged Shackles details, eye Bolt types, sizes, etc., and materials handling devices.

☐ **23. ALUMINUM STAMPINGS**—Two-color brochure illustrates the many uses to which aluminum is being put for light weight stampings and assemblies, and how the use of Reynolds industrial parts service eliminates the problems of rejects, scrap handling, sorting and shipping, along with reduced costs of supply. Reynolds Metals Co.

☐ **24. FLEXIBLE HOSE ASSEMBLIES**—Four-page bulletin on Resistoflex synthetic solvent-proof products, describing flexible hose assemblies, cites typical uses for which Resistoflex hose assemblies are especially suited, such as hydraulic, refrigerant, lubrication, and chemical lines.

☐ **25. MATERIALS HANDLING**—Four new illustrated bulletins on material handling equipment have just been released by Island Equipment Corp. PB64 70 3A covers light medium duty belt booster; HP-6, Flex-Grid belt conveyor, F 27 1A, Portable Cleated Belt Booster, and PC18 1A 2, Double Flex chain and case conveyor.

☐ **26. PYROMETER**—Bulletin on new Pyrovisor Radiation Pyrometer, explaining the theory of radiation pyrometry and features of the new unit, has just been released by the Bristol Co. Pictures and diagrams show accessories offered to adapt the unit for use with furnaces and kilns for indicating, recording and controlling temperatures up to 4000 deg. F.

☐ **27. PUMPS**—Controlled volume pump that delivers in straight line flow without pulsation, known as the Constametric is detailed in Bulletin 649 issued by the Milton Roy Co. It is recommended where precise metering is required and slug feeding is objectionable; for handling liquids in minute quantities, as little as 0.07 gph; for research and pilot work and others.

☐ **28. WIRE ROPE SOCKETS**—The Wire Rope Institute has issued Bulletin No. 1 on wire rope sockets. This is an industry standard compiled by industry engineers. The standards cover open wire rope and closed wire rope sockets.

☐ **29. AIR VALVES**—New 8-page illustrated bulletin No. 302 on In-Line mounting Master valves and Pilot valves has been issued by Ross Operating Valve Co. The former are designed to boost production by permitting faster machine speeds, to reduce operating costs because of less air consumption, and to provide for easier operation.

☐ **30. MERCURY SWITCHES**—Catalog 1343 describes a number of types of mercury switches used for electrical switching throughout industry. Features are simplicity, dependability, freedom from maintenance, and economy. Two basic types are described and illustrated: mercury-to-electrode and mercury-to-mercury. Minneapolis-Honeywell Regulator Co., Brown Instruments Divn.

☐ **31. VACUUM CLEANERS**—The Tornado industrial vacuum cleaner is described in detail in bulletin issued by Breuer Electric Mfg. Co. Motor-fan unit is mounted on rubber on top of tank, and is easily removed for use as portable, powerful electric blower which delivers concentrated blast of clean dry air. Three sizes available.

☐ **32. CUTTING FLUIDS**—Performance report No. 749 by valve manufacturer on results obtained with Lusol Cutting fluids is available from the F. E. Anderson Oil Co. Tapping speed increased 232%, and life of taps increased 500 to 600%. Charts give comparative data on tool life, cutting speeds and costs.

☐ **33. GAS CUTTING MACHINE**—Air Reduction announces the publication of new 12-page folder about the Oxygraph and Travograph pantagraph type gas cutting machines. The folder covers the field of application of the machines, describes distinctive features of each machine, and includes several pages showing the machines at work on typical jobs.

☐ **34. RUBBER LINED STEEL**—Bulletin entitled "Rubber Linings" issued by Metalweld Inc. describes rubber-lined steel for the transporting, storing and handling of corrosive chemicals. The B. F. Goodrich Volcalock bonding process with bond strength of over 500 lbs. psi, is used. Lining is bonded permanently. Table lists common corrosives for which rubber lined tanks can generally be recommended.

☐ **35. DIE-LESS DUPLICATING**—New catalog describes the Di-Acro system, and gives detailed illustrated information on rod parters, benders, shears, brakes and other equipment used. Equipment can be readily adjusted to cover unlimited range of duplicating requirements in wide variety of materials. Units can be used separately for shearing, forming and bending. O'Neil-Irwin Mfg. Co.

☐ **36. TUBE EXPANDERS**—8-page bulletin No. 380 describes line of Tube Expanders for high pressure boiler tubes, super heaters, economizers, water walls, circulating tubes, downcomers and risers, etc. Model 38 for tubes 1" O.D. to 4½" O. D. rolls and flares tubes in one operation, with uniformity. Thomas C. Wilson, Inc.

☐ **37. WELDNUTS**—Johnson Weldnuts are the subject of new bulletin issued by Lamson and Sessions Co. Use advantages are listed as reduced costs, design simplification, fast application and production speed-up. Tables give detailed dimensions of regular nuts and heavy nuts.

☐ **38. TRAFFIC PAINTS**—"A Further Report on the Formulation of Traffic Paints", Natural Resin Series, No. 10, is available from the American Gum Importers Laboratories, Inc. Varied formulae are given along with comment based on tests and factual data.

☐ **39. ALUMINUM ROLL-FORMED Shapes**—New catalog, No. 44-01, has been issued by Reynolds Metal Co., Industrial Parts Divn. on aluminum roll-formed shapes produced on order from stock dies. Available dimension range includes Gauge .008 .125"; Width, .250—37 inches; Length, 3-24 feet.

☐ **40. TUBE FITTINGS**—Complete line of tube fittings is listed in 60-page Parker Appliance Company catalog No. 203. Design data, specifications, materials and general dimensional data are listed for each of four types of fittings for hydraulic and fluid-handling system. Each fitting shape is illustrated by both drawing and photo. Tubing and tube fabricating equipment are also described and illustrated.

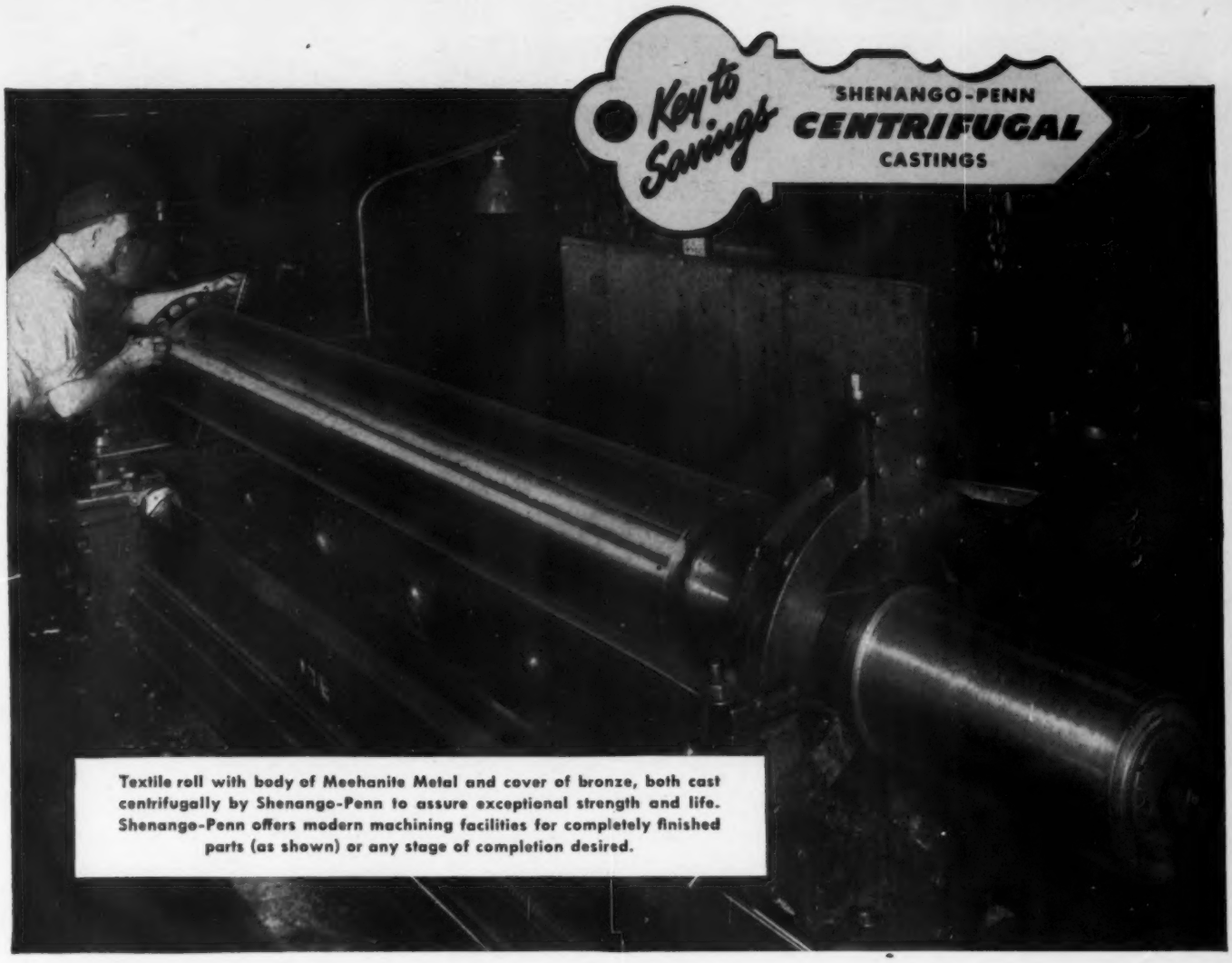
☐ **41. FILTERED DAYLIGHT**—Folder tells about "Blue Ridge Aklo Glass" made by the Blue Ridge Glass Corp. Aklo is a soft, eye-resting blue-green color. To obtain diffusion of daylight it is generally frosted. Depending upon thickness and finish of glass, it excludes up to 44.45% of sun heat. Advantages include lowered cost of air conditioning, personnel efficiency, reduction of glare, and long life because of resistance of Akle to thermal shock and low expansion characteristics. Libbey-Owens-Ford Glass Co.

☐ **42. BLOWERS**—Bulletin 21-B-37 issued by the Roots-Connersville Blower Corp. covers the smaller size Type AF rotary positive blowers, for pressure or suction service. Blowers are built in 18 standard sizes, with capacities ranging from 5 to 700 CFM up to 3 lbs., 5 to 415 CFM up to 5 lbs., and 15 to 245 CFM up to 7 lbs. A selection table covering the capacity and pressure range of each blower size is included.

☐ **43. SYNTHETIC RESINS**—Revised edition of technical booklet describing properties and uses of Hercules Powder Company's synthetic resins is now available. It includes chart key to specific uses which matches the resins with their actual and potential uses. Resins described are used in manufacture of coatings, adhesives, printing inks, linoleum and floor tile, essen-

(*Please turn to page* 16)

**ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE**
**Three Pages — 12 - 14 - 16**
**Use convenient prepaid postcards on pages 19 & 20**




Textile roll with body of Meehanite Metal and cover of bronze, both cast centrifugally by Shenango-Penn to assure exceptional strength and life. Shenango-Penn offers modern machining facilities for completely finished parts (as shown) or any stage of completion desired.

# How this textile roll might smooth out a problem for YOU

IF SYMMETRICAL parts (such as sleeves, liners, rings, bushings, rolls and roll covers) figure in the machinery you build or operate, the above roll has qualities that could probably save you time and money.

The roll's body is Meehanite Metal—a big advantage in itself. The cover is bronze. Both are Shenango-Penn *centrifugal* castings. This means fine-grain, *pressure-dense* metal, assuring exceptional strength and hardness, and permitting the finest kind of finish. You just can't beat this combination for resistance to wear, breakage and distortion . . . for *long life!*

That's why Shenango-Penn is continually producing symmetrical, annular and tubular parts, large and small, for many services in many industries. Send for free bulletins on either ferrous or non-ferrous made-to-order centrifugal castings or on *centrifugally cast* bronze bushing stock in standard sizes.

**SHENANGO-PENN MOLD COMPANY**
2478 WEST THIRD STREET • DOVER, OHIO
Executive Offices: Pittsburgh, Pa.

SHENANGO-PENN

**ALL BRONZES • MONEL METAL**
**NI-RESIST • MEEHANITE METAL®**


*Want Additional Product Information? See Page 19.*




(*Continued from page* 14)

tial oils and fixatives, sizes, binders for flame-proof compositions, and many other products.

☐ **44. CAUSTIC SODA**—New edition of Solvay Technical and Engineering Service Bulletin No. 6, Caustic Soda, 80 pages, contains information on the properties of caustic soda and its solution, the nature and advantage of liquid caustic soda, plus latest data on its unloading and handling. Solvay Sales Divn., Allied Chemical & Dye Corp.

☐ **45. COMBUSTION CONTROLS**—Bulletin C-22, 16 pp., on automatic combustion controls describes controls for economical and efficient boiler operation made by the Ace Instrument Co., Inc. Instruments include steam pressure, air flow, draft and other types of instrumentation.

☐ **46. BATTERY CHARGING**—Battery charging plugs and receptacles are detailed in Catalog 50B just released by Albert & J. M. Anderson Mfg. Co. Data covers plugs and receptacles used in manually or automatically controlled charging systems. Though designed for use on materials handling equipment, accessories are also practical for other applications having similar requirements.

☐ **47. SPIRAL WELD PIPE**—Bulletin contains table of sizes, O.D. 6" to 36" and use data, for spiral weld pipe available from the Taylor Forge & Pipe Works.

☐ **48. FLEXIBLE SHAFT MACHINE**—Bulletin tells about Series M Kellerflex which is characterized as the greatest advance in Flexible Shaft Machine engineering in 25 years. This is an all-purpose machine for use in burring, filing, sanding, grinding, wire brushing, etc. It is described as being a "mechanical muscle" which makes for finer and faster production at lower cost. Pratt & Whitney.

☐ **49. TYPEWRITERS**—The New IBM electric executive typewriter and its use advantages are described in detail in bulletin issued by International Business Machines Corp. Each of the four type faces designed for modern business usage are illustrated. Controlled impression assures uniformity throughout typewritten pages. Multiple copy control assures uniformly legible work in making copies or stencils.

☐ **50. PLUG VALVES**—Durco corrosion resisting plug valves, Type B, are detailed in Bulletin 637 just released by The Duriron Co., Inc. These pressure lubricated plug valves are designed for heavy duty corrosion service. Top lubricated and bottom lubricated types are available.

☐ **51. VENT SETS**—Bulletin describes Axial Flow fans up to 48" in diameter. Two types have been developed, volume fans, and pressure fans. Fans are said to consume less power than other fans, and to develop high capacities at much lower rotational speeds. Fans will not overload; motor cannot burn out; design eliminates re-entrance loss. Debothezat Fans Divn., American Machine and Metals, Inc.

☐ **52. STAPLING PLIER**—Hog ring type stapling plier with magazine feed is described in bulletin issued by Bostitch. Wire, rods, cords and cables up to ½" in diameter easily pass inside the opened staple which can then be closed to a diameter as small as 5/16". Tool can be used for attaching staples, binding groups of wires, sealing plastic bags, etc.

☐ **53. SPEED CONTROL**—Bulletin 4912 describes improved design of Reeves Vari-Speed Jr. unit for light horsepower requirements. Unit delivers infinitely variable speed to any driven machine with speed ratios from 1¾ to 2¾, and is made in six sizes for use with any standard constant speed motor up to 1½ hp. Reeves Pulley Co.

☐ **54. VEE PLY BELTING**—Bulletin V1400-B18 gives full information about Worthington Pump and Machinery Corporation's new Vee Ply belting, the quick detachable V belt. Reduces inventory by eliminating need to carry spare set of endless belts for every machine. It was especially designed to service emergency breakdowns, and can be adapted to most V-Belt applications. It is easily uncoupled from roll stock as needed and is adjustable to any length. There are no waste ends. It is designed and recommended for continuous heavy duty service.

☐ **55. MOTORS**—Operating adventages and construction features of Allis-Chalmers Mfg. Company's bracket bearing synchronous motors in sizes from 30 to 1000 hp, are described in 16-page bulletin 05B61128. Vertical synchronous motors which are built in all sizes for pump drives and other applications, exicters and starters, are also touched upon in the bulletin.

☐ **56. FILTERS**—Filters for industrial and laboratory work, which feature a backwashing system for ease of cleaning, are illustrated in new 12-page booklet published by Titeflex, Inc. Drawings show how the filters operate, and information is given on the stone membrane and the wire mesh membrane.

☐ **57. HUB SPROCKETS**—New 6-page illustrated folder shows latest prices on hub sprockets for standard SAE single and double roller chain and for single and double roller chain. Tables are complete as to specifications, and helpful in making quick selection.

☐ **58. CUTTING WHEELS**—Straight wheels for use on benchgrinders, cut-off machines, and table saws, and disc wheels for power sanders and grinders are subject of bulletin issued by Bay State Abrasive Products Co. The straight sided wheels have wide adaptability for slotting, shaping, cutting, and sharpening all types of materials. The hub-disc wheels last for hours and even days on tough weld smoothing jobs, and may be used for scarfing and beveling preparatory to welding.

☐ **59. MACHINE VIBRATION**—Booklet "Westsorb Felt for Machine Mounting" analyzes vibration examples in various fields and explains how they were successfully met with Westsorb vibration absorbing material. Western Felt Works.

☐ **60. BELT CONVEYORS**—Complete information is presented on stationary, portable and 16 types of special purpose belt conveyors, both troughed and flat belt, in "Move More for Less" 32-page belt conveyor bulletin just released by Lippman Engineering Works.

☐ **61. INDUSTRIAL SWITCHING**—16-page bulletin 3810A, describes 80-ton diesel-electric locomotive for industrial switching. It gives detailed information about the locomotive and shows why it is economical to operate. Apparatus Dept., General Electric Co.

☐ **62. MOTOR CONTROL**—Bulletin 860 issued by The Brown-Brockmeyer Co. details the Dyna-Speed electronic motor control system; ¼-½ hp. It may be set to hold any desired speed over a range of 20 to 1 (80 to 1800 rpm); selected speed is maintained substantially constant regardless of load changes. It is ideal for variable speed control on wide variety of applications requiring finger-tip speed control, constant torque and protection against inadvertent load changes.

☐ **63. HOSE CLAMP**—Hose clamp that tightens itself, thus cutting assembly time, speeding up replacements, and which eliminates waste and blow-pasts, is subject of catalog sheet issued by Corwin Screw Divn., The American Hardware Corp. The clamp is easy to install, and insures a tight seal. It is rust-proof and wear resistant.

☐ **64. METAL CLEANERS**—Bulletin C-106 issued by the Hanson-Van Winkle-Munning Co., "Cleaners for Effective Metal Cleaning" covers: metals to be cleaned, the soils to be removed, recommended soak and electro-cleaners, and includes descriptions of cleaners, use, temperature ranges, recommended concentrations, etc.

☐ **65. JACK LOCKS, CLAMPS, Etc.**—The Morton Machine Works has just issued engineering 72-page catalog illustrating complete line of jack locks, fixture clamps and standard details. Also featured is fixture clamp for clamping a casting through the bored hole onto a pilot plate.

(*Please turn to page* 19)

**ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE**

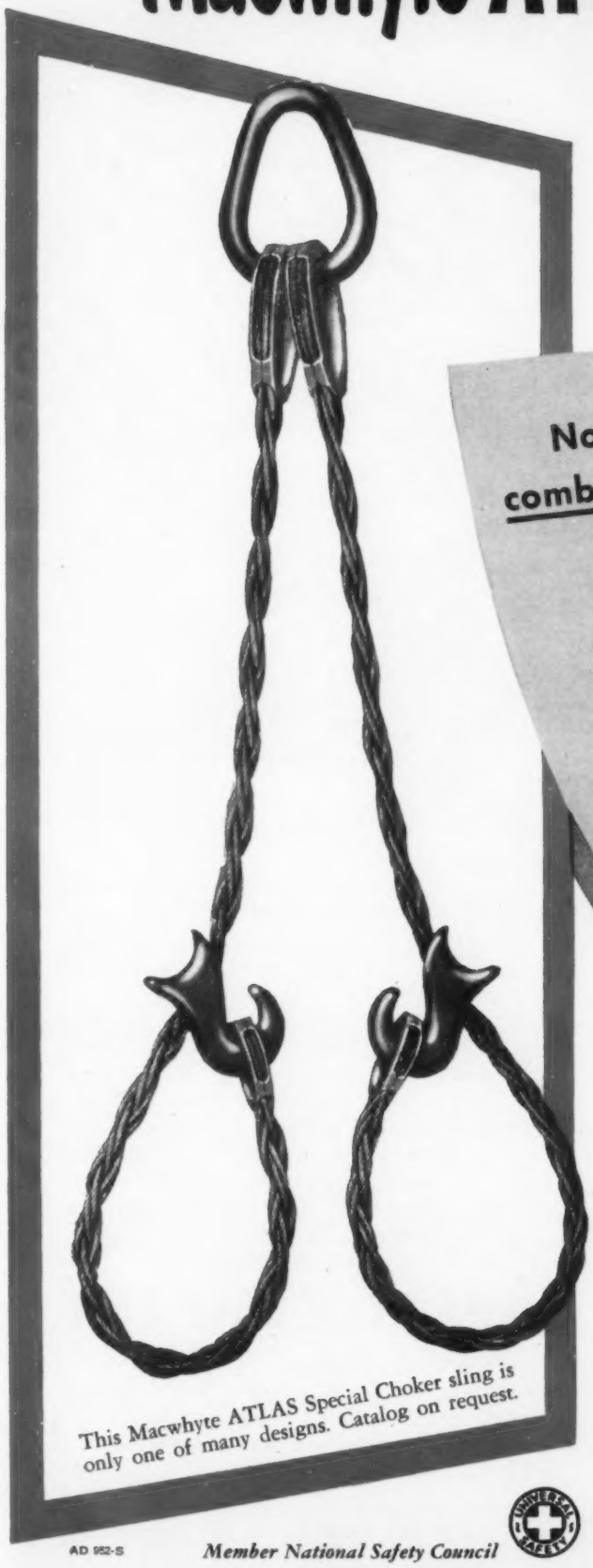
**Three Pages — 12 - 14 - 16**

**Use convenient prepaid postcards on pages 19 & 20**

# It pays to specify

# Macwhyte ATLAS Braided Wire Rope Slings

**There's a Macwhyte Sling that's the right sling for any sized load.**



This Macwhyte ATLAS Special Choker sling is only one of many designs. Catalog on request.

**No other braided sling has this combination of construction features:**

1. ATLAS Slings are braided from right lay and left lay *endless* ropes.
2. In ATLAS Slings the left lay ropes are braided to the right, and the right lay ropes are braided to the left.
3. All ropes in ATLAS Slings follow a continuous spiral path throughout the entire body length.

**This special construction guarantees *perfect balance***

. . . greater flexibility
. . . resistance to kinking
. . . better purchase on the load
. . . greater reserve strength
. . . maximum safety

## MACWHYTE COMPANY

**2918 Fourteenth Avenue**
**Kenosha, Wisconsin**

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies.

• • • • •

Macwhyte Distributors throughout the U.S.A. and other countries. Mill Depots in the following cities: New York, Pittsburgh, Chicago, Minneapolis, Fort Worth, Portland, Seattle, San Francisco, Los Angeles

AD 952-S

*Member National Safety Council*

# For ALUMINUM

## that gives you more and can cost you less . . .




THERE ARE many reasons why it's to your advantage to look to us for all your aluminum needs. Here are a few of them:

1. You get Reynolds Lifetime aluminum that's guaranteed as to uniformity of size and thickness; of alloy, temper, and other physical characteristics.
2. You know that you are obtaining your aluminum from a well-known, dependable source.
3. You have the assurance that your aluminum will be packaged carefully. Thus, the contents will arrive undamaged—without water stains, bending of material, injury to corners, or surface scratches.
4. You have the additional valuable advantage of our metallurgical advice and assistance in problems of application.

And, what's very important, we can show you how it can cost you less when you place your orders for aluminum with us. So, whenever you need aluminum, remember that your best source of supply is United States Steel Supply. For prompt, courteous service, just phone, wire or write the warehouse or sales office nearest you.

UNITED STATES STEEL SUPPLY COMPANY · USS STEELS · SERVICE

SYMBOL OF SERVICE

# UNITED STATES STEEL SUPPLY COMPANY

Warehouses: BALTIMORE · BOSTON · CHICAGO
CLEVELAND · LOS ANGELES · MILWAUKEE · MOLINE, ILL. · NEWARK · PITTSBURGH
PORTLAND, ORE. · SAN FRANCISCO · SEATTLE · ST. LOUIS · TWIN CITY (ST. PAUL)
Also Sales Offices at: KANSAS CITY, MO. · PHILADELPHIA · TOLEDO · TULSA · YOUNGSTOWN
Headquarters Offices: 208 S. La Salle St.—Chicago 4, Ill.

USS

UNITED STATES STEEL



*Want Additional Product Information? See Page 19.*

SQUARE D's *New*

# SAFETY SWITCHES

*Types A, C and D




## Backed by 40 years' DESIGN LEADERSHIP

***The remarkable superiority of this new switch line is reflected in these TYPE A design and operating features:***

**MODERN STYLING** is both functional and attractive.

**COMPACTNESS** obtained without sacrifice of wiring convenience.

**FULL COVER INTERLOCK** has attachment that locks switch "ON" or "OFF" with 1, 2, 3 or 4 padlocks of nearly any size or shape.

**SIMPLE MECHANISM**—quick make-and-break action—no dead center.

**SILVER-PLATED** current-carrying parts.

**EXPOSED BLADES** permit visual checks of switch operation.

**DEAD-FRONT** line terminals are protected by hinged arc chamber cover.

**MAGNETIC ARC PLATE** adds to unusually high rupturing capacity.

**POSITIVE PRESSURE** jaws and fuse clips, steel reinforced, silver-plated.

**NON-TRACKING** insulation used in base. Melamine insulating cross-bar.

**REMOVABLE PRESSURE CONNECTORS** permit substitution of solder lugs, where preferred.



**Types C and D similar to Type A in appearance—differ in construction details*

**In production:** 30 and 60 ampere sizes ...NOW ● 100 and 200 ampere sizes ...SOON ● Larger ampere sizes ...LATER

*Write* for Bulletin 3100 • Square D Company, 6060 Rivard Street, Detroit 11, Michigan

**SQUARE D COMPANY**

DETROIT • MILWAUKEE • LOS ANGELES

SQUARE D COMPANY CANADA LTD., TORONTO • SQUARE D de MEXICO, S.A., MEXICO CITY, D.F.

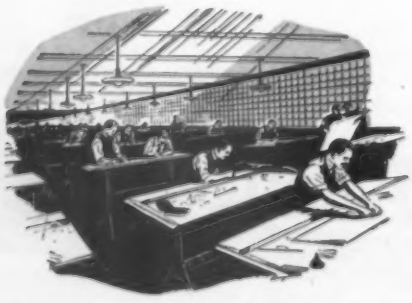
*A note on Abrasives*

# Improved Abrasive Tools help step up production...cut costs





New production efficiencies and economies are being realized almost daily as a direct result of technical advances in abrasive products. At The Carborundum Company these improvements do not just "happen." They are derived from a carefully formulated program. Product Development . . . an important activity here . . . pools specialized knowledge, experience and skill. It probes into the performance of present products . . . seeks and finds possibilities for doing the job better. It examines and compares the action of bonded and coated products under every conceivable production condition. It studies and restudies technical advances in machines and methods. CARBORUNDUM'S development staff turns up ideas that can be incorporated into new products as well as better ways of using present products. Both are important to production management. As a user of abrasive products by CARBORUNDUM, you receive the direct benefit of all advances in product development. This —together with abrasive engineering and other services—offers another reason for specifying and buying abrasive tools produced by CARBORUNDUM . . . the leading name in abrasives. The Carborundum Company, Niagara Falls, New York.



**The only complete line of Abrasive Tools is**

**CARBORUNDUM**

TRADE MARK

*"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company*

# Engineering News
## ON ABRASIVE PRODUCTS

### Belt Backstand Idler Techniques Effect Operating Cost Reduction

Substantially increased output, lower unit costs and improved finishes are influencing more metal working plants to switch to belt backstand idlers for grinding and finishing flat and contoured surfaces of both small and medium weight pieces. In many factories where set-up wheels were formerly used, conversion from 25 to 100% to the backstand technique has been effected. While these methods normally involve grinding speeds of 6500 to 7000 SFPM with glue-bonded abrasive cloth belts, speeds of 10,000 SFPM are being used widely today with resin bonded belts.

As a result of recent wide-spread experiences with belt backstand idler techniques, our trained staff of engineers is equipped to guide users in making the best use of this equipment. In all cases they are able to recommend applications and abrasive materials to meet your requirements.



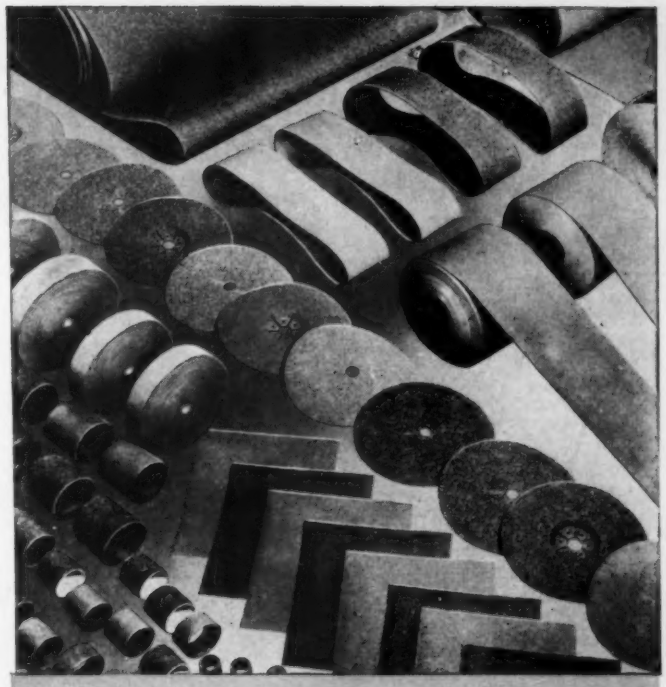
### Better Work with Cylindrical and Crankshaft Grinding

Cylindrical grinding wheels including crankshaft wheels by CARBORUNDUM are engineered to provide the tools required for maintenance of efficient production rates, rapid stock removal and fine surface finish.

V11 bond represents the most recent contribution to this class of grinding. These wheels are designed with a *specific structural balance* which when combined with the proper grain size and abrasive type offers the following advantages to both operator and management:

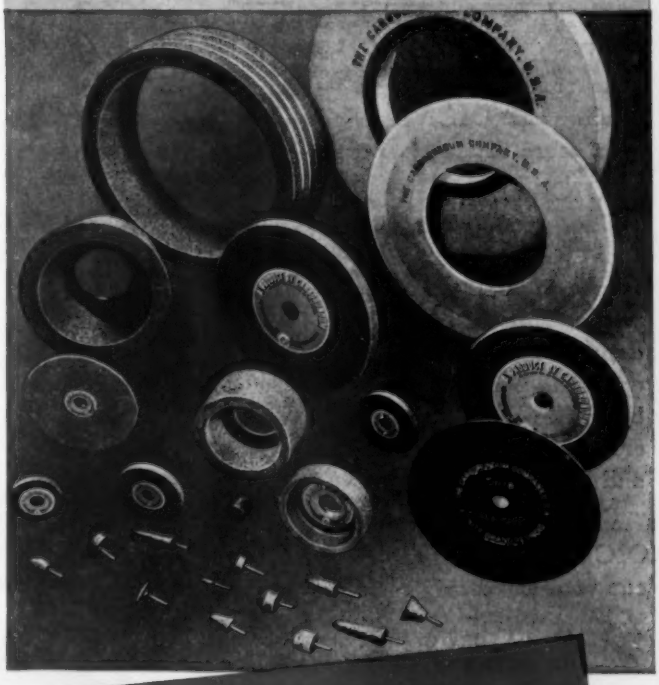
1. Cool and free cutting characteristics promote more efficient production of superior finishes and close tolerances. This is of great importance in operations involving both OD and shoulder or face grinding.
2. Designed structural balance permits continuous fast cutting rates which promote high production.
3. Fast cutting qualities combined with long life save dollars in operator and machine time as well as abrasive costs.
4. Engineered uniformity of the abrasive and bond components of these wheels permits close control of part size and form.
5. Self dressing characteristics provide longer periods of use between dressings . . . save dressing time, usable abrasive and dressing tools.
6. Ability to grind a wide range of materials makes possible savings in inventories of special wheels and minimizes requirements for premium priced abrasives.
7. Savings in set-up time are made possible because the versatility of V11 bond wheels permits efficient grinding of many varieties of work, making it unnecessary to change wheels when changing from one job to another.

For prompt attention to abrasive problems, call your nearest branch office of The Carborundum Company.



**COATED PRODUCTS** — SHEETS • ROLLS • BELTS • DISCS SPECIAL SHAPES

**BONDED PRODUCTS** — ABRASIVE WHEELS • STICKS, STONES AND RUBS • SPECIALTIES • SUPERFINISHING STONES • SPECIAL FORMS • ABRASIVE GRAINS AND FINISHING COMPOUNDS



FOR EVERY ABRASIVE APPLICATION
. . . CALL IN
**CARBORUNDUM**
TRADE MARK



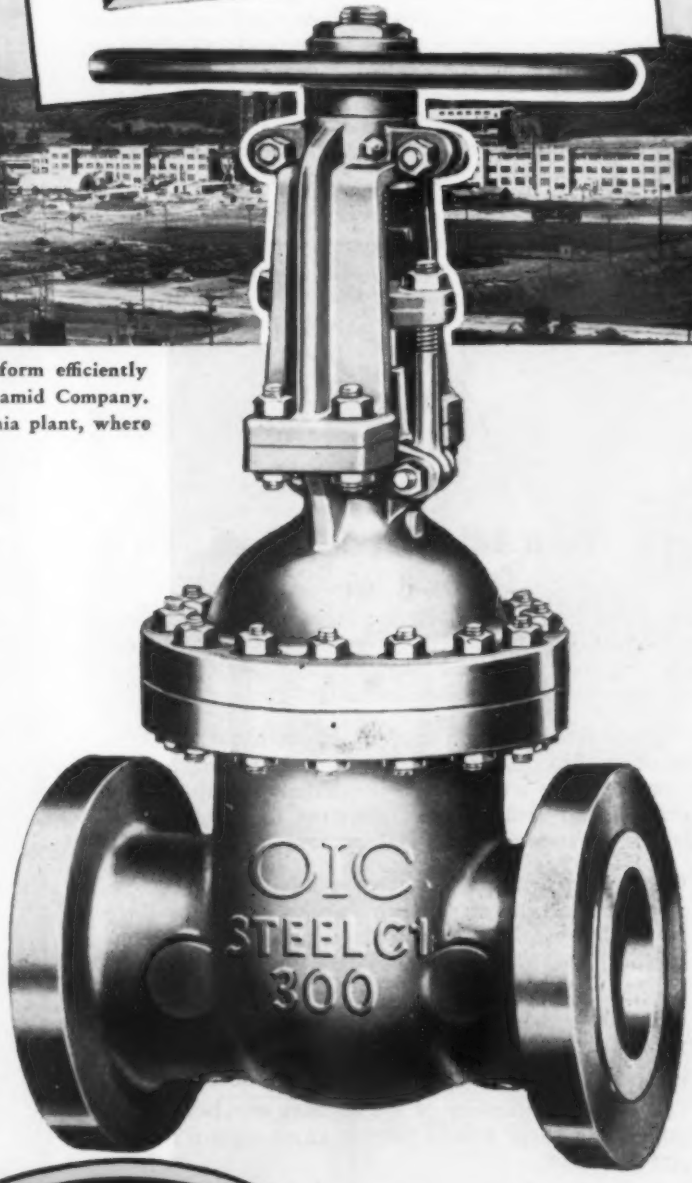

AMERICAN CYANAMID COMPANY. OIC Valves perform efficiently for the Calco Chemical Division of the American Cyanamid Company. Shown here is the company's Willow Island, West Virginia plant, where OIC Valves are installed.

Hundreds of companies, in industry after industry, are entrusting their important flow control job to the OIC long line of pace-setting valves.

The reasons are simple — these companies are finding that OIC Valves cut operating costs and give more efficient service — and they're *safer!*

In OIC Valves, leak-proof joints guard against sudden pressure-drop. The flow is protected from turbulence. Heavier-than-required construction in all parts keeps pressures and stresses within safe bounds. Wedges of heavy I-beam design stop all flow with positive closure, or open the ports for smooth, *free* flow. Integral body ribs guide the wedge to its seats with unerring accuracy — effectively reduce vibration and wear.

Handle *your* flow control requirements with OIC Valves! Their many pace-setting features cut your operating costs to a new low!




**ELIMINATE VALVE CHANGE-OVER PROBLEMS WITH THE HANDY OIC CROSS REFERENCE CHART**

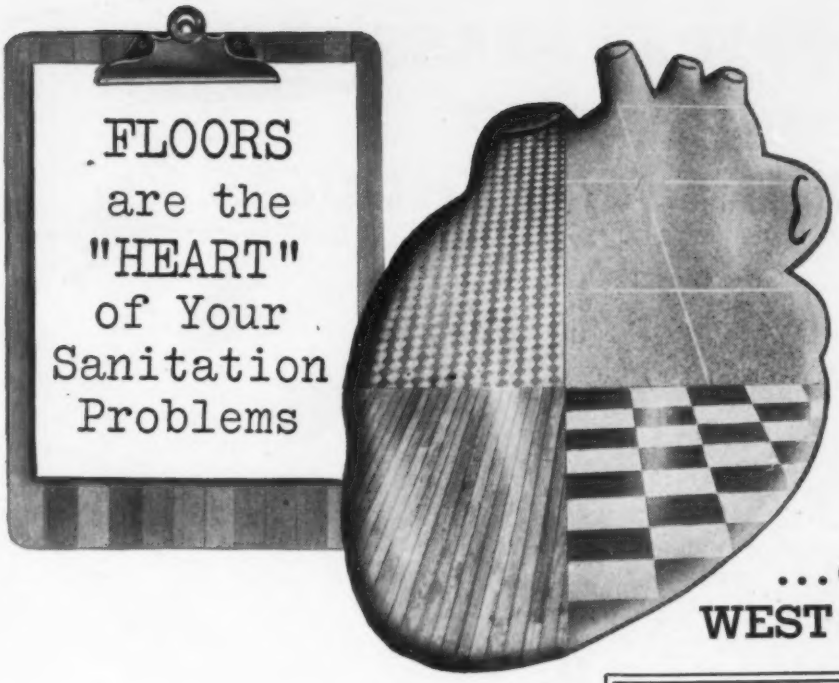



Valve replacement made easy! Simply check the number of the valve on the line, look in the chart, and you'll find the right OIC Valve to replace it. Write for your *free* copy to The Ohio Injector Company, Wadsworth, Ohio.

0-649-15

OIC VALVES

FORGED STEEL • CAST STEEL • IRON • BRONZE




## ...care for them with WEST Maintenance Products

Your floors, like the human heart, are vulnerable to the effects of neglect or indifferent treatment. To avoid shortening their "life-span" and increasing your sanitation overhead, wisely choose West floor products. Special care and treatment with West floor maintenance materials *prolongs the life* and beauty of your floors at an absolute minimum cost.

The strain on your budget is reduced because West Products, formulated for cleaning, sealing and preserving floors, are noted for their long-lasting efficiency—enabling you to protect all floors with the least time and effort.

*Our trained representative will be glad to demonstrate any West product desired. No obligation!*

**PRODUCTS FOR THE PROMOTION OF INDUSTRIAL SANITATION**

| | |
|---|---|
| **1. ZOLEO**<br>***Cleans*** Cork, Tile, Wood, Linoleum, Marble, Terrazzo Floors and painted or varnished surfaces. | Liquid soap with Linseed Oil Base, mixes with cold water instantly. Softens dirt, loosens grease and grime with fast emulsifying action. |
| **2. CORO-NOLEUM**<br>***Disinfects and Deodorizes as it Cleans*** all floors except rubber, soft mastic, or asphalt base tile. | Phenol coefficient of 7.5. Kills the germs of many communicable diseases in addition to cleansing and eliminating the need of soap. |
| **3. LUSTRECLEAN**<br>***Cleans, Deodorizes and Lightly Waxes*** Wood, Mastic, Linoleum, Cement, Terrazzo, Composition Tile, Asphalt Tile, Painted and Varnished Floors. | Essentially a cleaner but leaves a fine film of wax on surface. Deodorizing properties make Lustreclean a triple purpose product. Excellent for floors, walls and painted surfaces. Removes marks left on floors by composition soles and heels of shoes. |
| **4. KWYKWAX**<br>***Waxes and Finishes*** all types of floors, except Terrazzo. | No rubbing or polishing necessary. Dries in 20 minutes (or less) with a high hard lustre, which resists traffic wear, protecting floor surface. |
| **5. FLOOR MACHINES**<br>***For cleaning and waxing floors***—shampooing and scrubbing carpets, rugs, etc. | Single and double brush models, with a complete line of accessory attachments. Low center of gravity makes for greater balance, easier handling. No oiling or adjusting necessary. Trouble-free, built-in G.E. motor. |

**WEST DISINFECTING Company**

42-16 West Street, Long Island City 1, N. Y.

PLEASE CLIP TO YOUR BUSINESS LETTERHEAD

*FREE!*

**WEST DISINFECTING COMPANY**
42-16 West Street, Long Island City 1, N. Y.

Gentlemen:
Please send me Free samples and literature of following product numbers: 1. ☐ 2. ☐ 3. ☐ 4. ☐ 5. ☐
Kindly have your trained representative call to arrange a free, non-obligating demonstration ☐

Name_____ Position_____
Address_____
City_____ State_____

15


*Want Additional Product Information? See Page 19.*

# FAST COPPER and BRASS SERVICE FROM ALL THESE HUSSEY WAREHOUSES




*Our 101st Year*
1848-1949

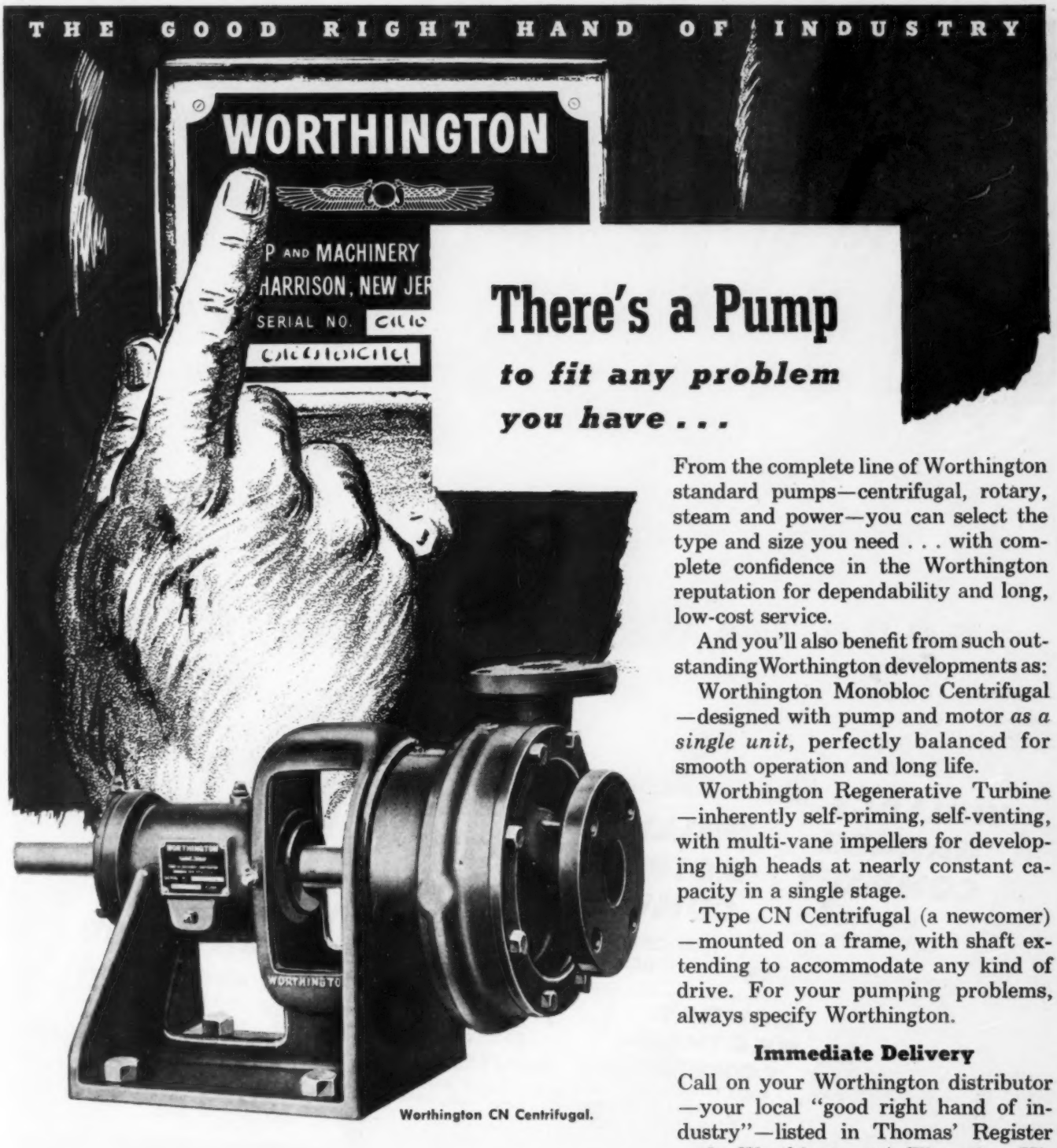
FAST QUICK **DELIVERY or PICK-UP**

**HUSSEY**

Hussey Warehouse stocks of Copper and Brass are complete and ready for you. A complete service organization stands ready to speed delivery of your copper and brass requirements or immediate pick-up by your own trucks can be made at any of the 7 industry-located Hussey Warehouses.

**C. G. HUSSEY & COMPANY** (Division of Copper Range Co.)
**ROLLING MILLS AND GENERAL OFFICES, PITTSBURGH, PA.**
*Hussey warehouses carry stocks of Copper and Brass Products for prompt shipment.*

THE GOOD RIGHT HAND OF INDUSTRY




# There's a Pump

***to fit any problem you have . . .***

From the complete line of Worthington standard pumps—centrifugal, rotary, steam and power—you can select the type and size you need . . . with complete confidence in the Worthington reputation for dependability and long, low-cost service.

And you'll also benefit from such outstanding Worthington developments as:

Worthington Monobloc Centrifugal—designed with pump and motor *as a single unit*, perfectly balanced for smooth operation and long life.

Worthington Regenerative Turbine—inherently self-priming, self-venting, with multi-vane impellers for developing high heads at nearly constant capacity in a single stage.

Type CN Centrifugal (a newcomer)—mounted on a frame, with shaft extending to accommodate any kind of drive. For your pumping problems, always specify Worthington.

Worthington CN Centrifugal.

**Immediate Delivery**

Call on your Worthington distributor—your local "good right hand of industry"—listed in Thomas' Register under Worthington "A-Z" section. His local stocks are supported by factory stocks for prompt delivery. Send coupon for free bulletin on Standard Pumps.

PCM98

Worthington Pump and Machinery Corporation
Pump and Compressor Merchandising Division
Harrison, New Jersey

Send latest bulletin on Worthington Monobloc .....Regenerative Turbine.....CN.....

Name.....

Company.....

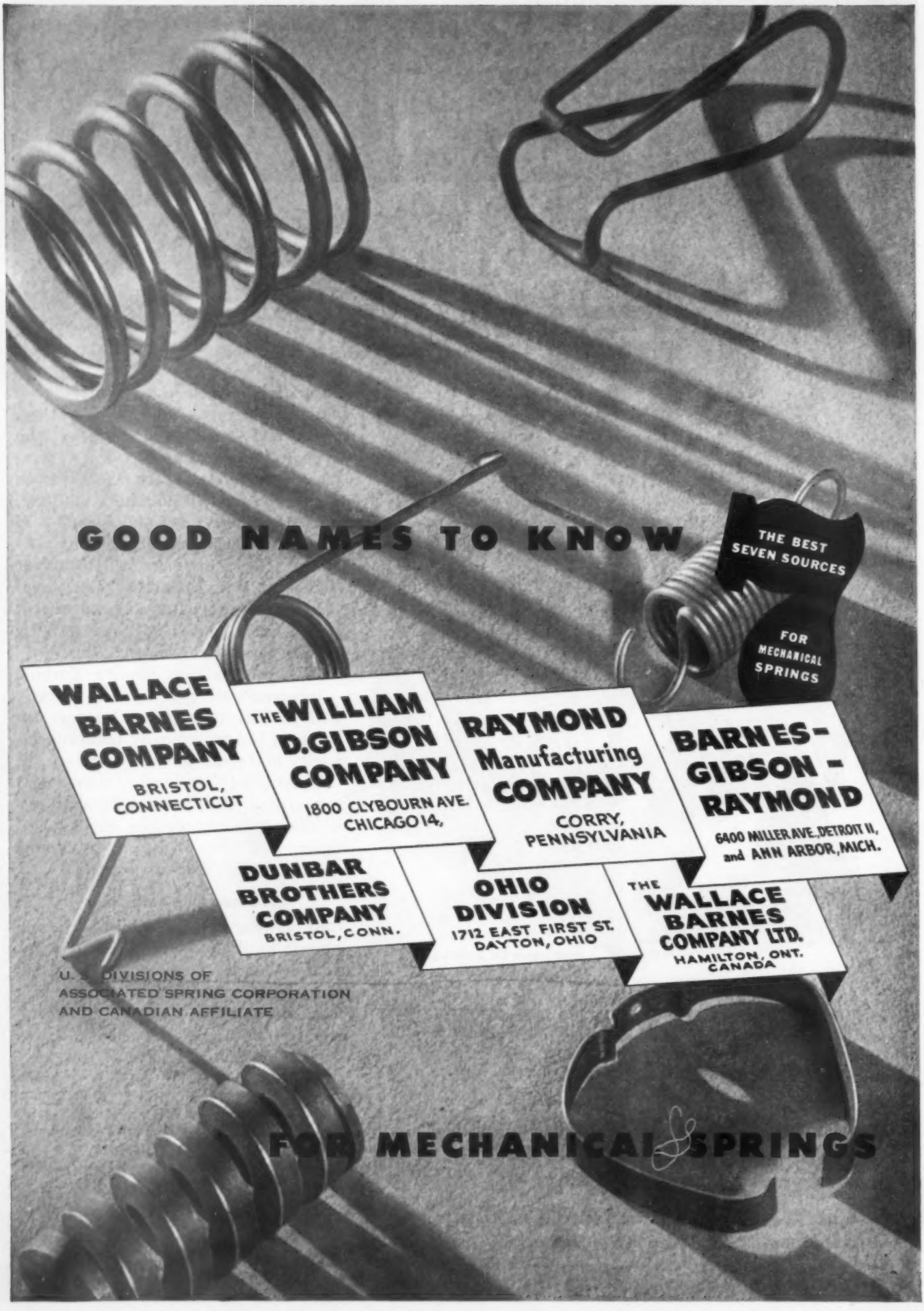
Address.....

# WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION
Pump and Compressor Merchandising Division

*The Good Right Hand of Industry*

POWER TRANSMISSION: sheaves, V-belts, variable speed drives
PUMPS: centrifugal, power, rotary, steam
AIR COMPRESSORS: water-cooled, air-cooled

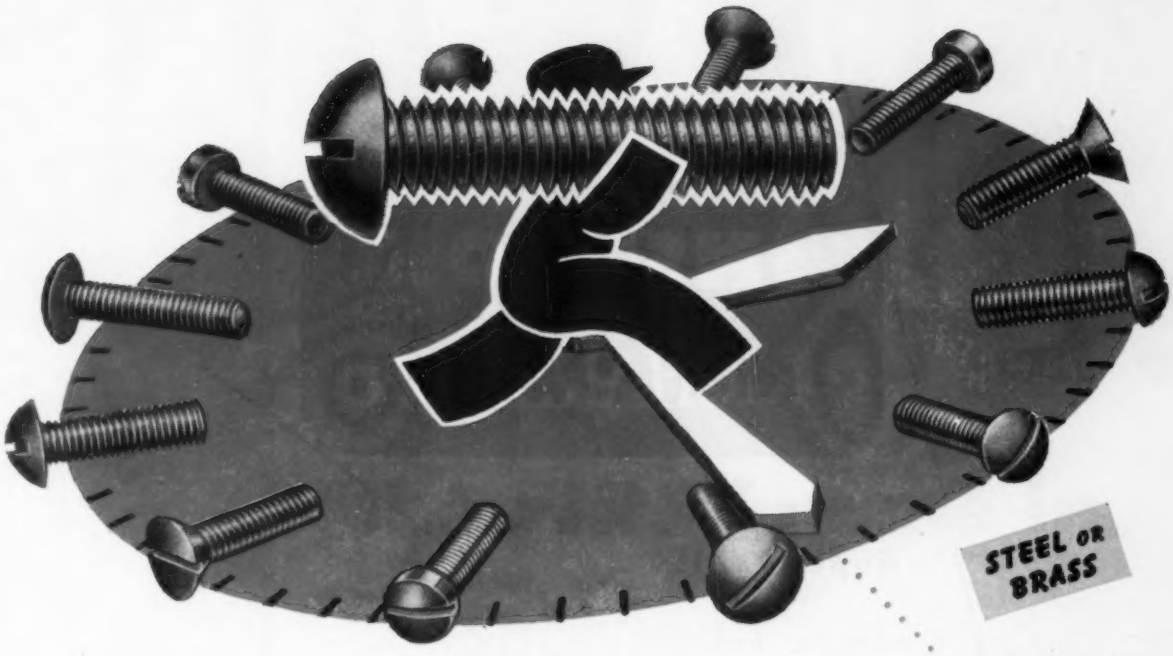


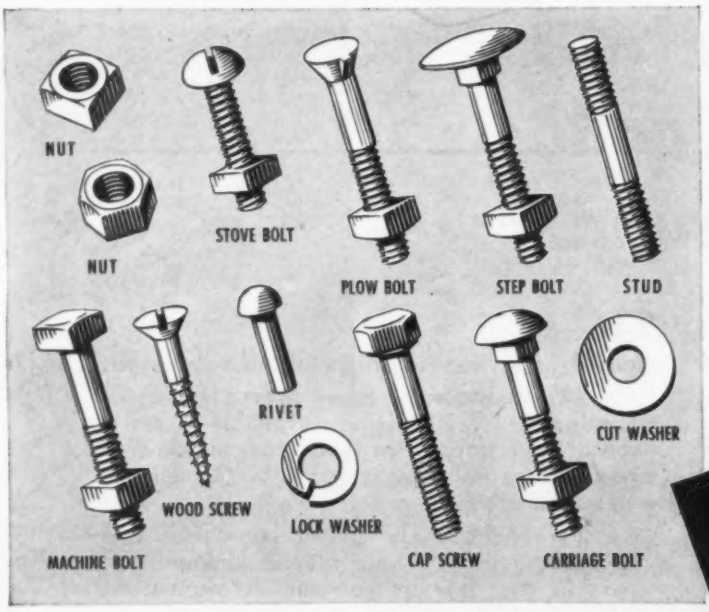



*Want Additional Product Information? See Page 19.*

# When it's time to order *machine screws...*

## it's time to call STERLING BOLT




MACHINE SCREWS are an important part of the STERLING BOLT line. You can obtain from us all types and sizes, standards and specials, in steel or brass.

In addition to machine screws, practically any other metal fastening you may require can be quickly found in the pages of our big Easy-to-Use Catalog. A few of the more popular items are illustrated at the left.

Whatever your metal fastening needs may be, *you can depend on* STERLING BOLT ONE-SOURCE SERVICE *to increase your efficiency and to save you time and money.* When it's time to order machine screws or any other metal fastenings, *it's time to call* STERLING BOLT.

**PHONE, WIRE, TELETYPE OR WRITE TODAY!**

*Thumb indexed for quick reference.*
*Packed with valuable engineering and technical information.*
*Two hundred thousand items.*
*One hundred twenty-four pages.*
*Set in large, easy to read type.*

*Send for your FREE catalog TODAY*

27 YEARS OF CONTINUOUS SERVICE TO BUYERS OF METAL FASTENINGS

# STERLING BOLT COMPANY

201 W. JACKSON BLVD., CHICAGO 6
TELETYPE CG 488
TELEPHONE HARRISON 7-9880

**SALES OFFICES:**

Union Trust Bldg., Cincinnati 2, Ohio • 17 W. Market St., Indianapolis 4, Ind.
361 W. Wisconsin Ave., Milwaukee 3, Wis. • 1228 N. Hadley St., St. Louis 6, Mo.

**STERLING BOLT COMPANY**
201 W. Jackson Blvd., Chicago 6, Illinois

Please send me without obligation your new easy-to-use catalog.

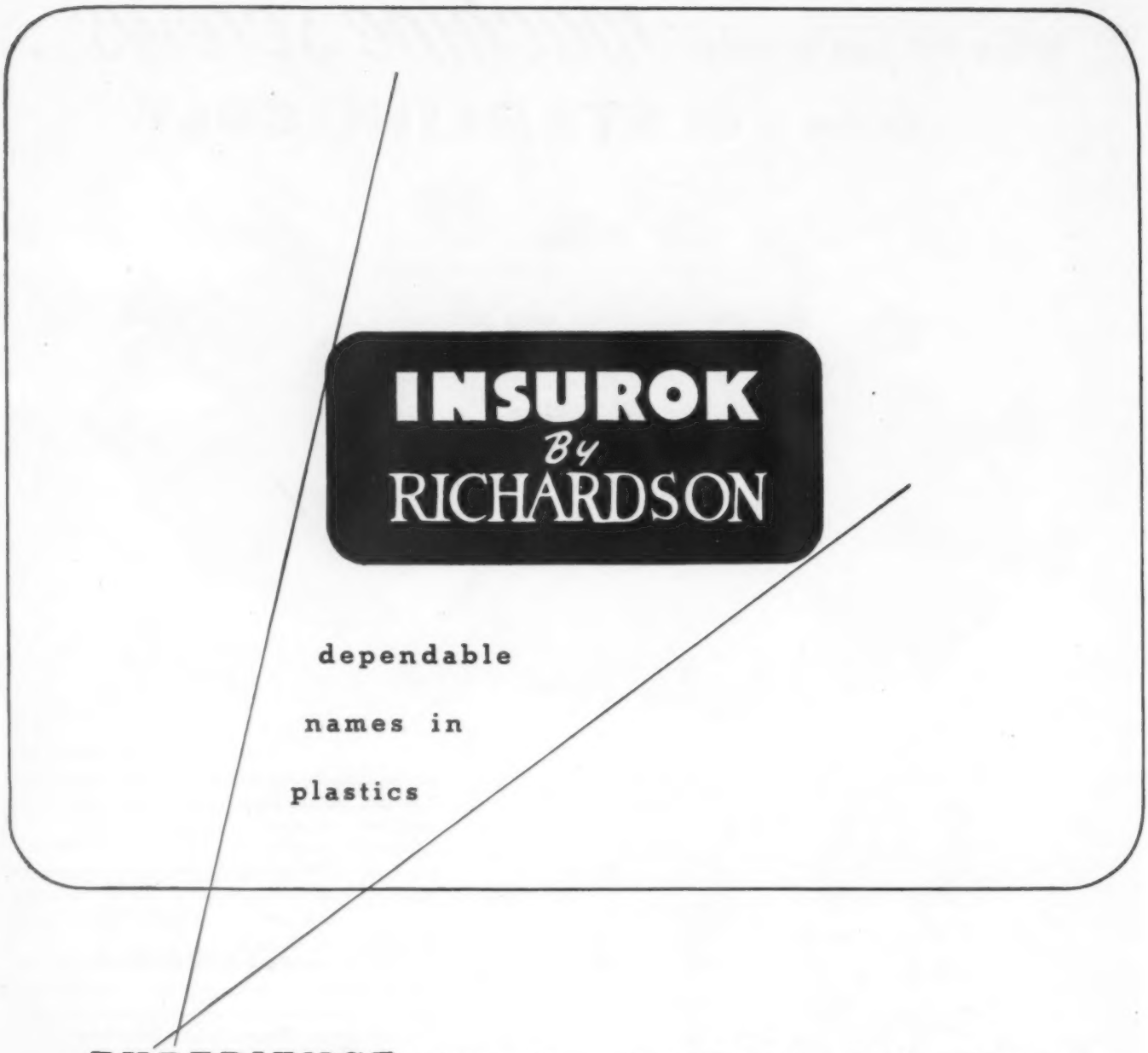
NAME_____

POSITION_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____




**EXPERIENCE** is just one of the factors that make the names of INSUROK and Richardson more significant to manufacturers whose products require laminated or molded plastics. Richardson customers benefit from this experience in many ways.

(1) Richardson experience with a wide variety of plastic materials helps you select the one that accomplishes your purpose most effectively, efficiently and economically.

(2) Richardson experience in the design and production of Laminated INSUROK and Molded INSUROK products has resulted in savings to scores of manufacturers.

(3) Richardson's many proven grades of Laminated INSUROK are available in sheet, rod or tube stock or in fabricated, punched or post-formed component parts for an endless variety of applications.

(4) INSUROK plastic products and Richardson services have played an important part in the development and refinement of many products.

It might be to our mutual advantage to know how these materials and services can work for you.

INSUROK is a registered trade-mark of The Richardson Company

*The* RICHARDSON COMPANY

GENERAL OFFICES: LOCKLAND, OHIO FOUNDED IN 1858

**Sales Headquarters: MELROSE PARK, ILLINOIS**

CLEVELAND · DETROIT · INDIANAPOLIS · MILWAUKEE · NEW BRUNSWICK, (N. J.) · NEW YORK · PHILADELPHIA · ROCHESTER · ST. LOUIS



*Want Additional Product Information? See Page 19.*



# LYON

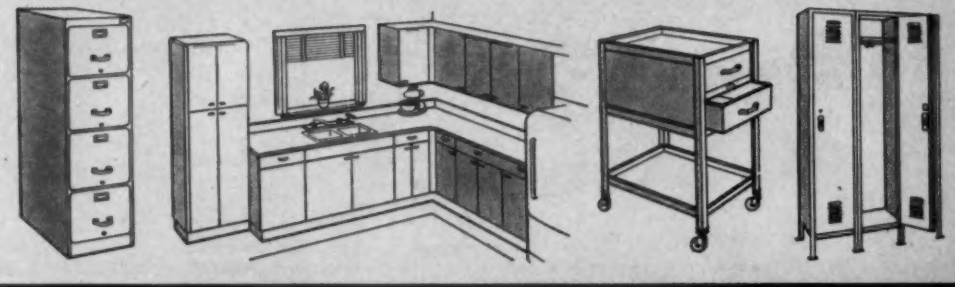
## the *FIRST* name in

- Shelving
- Kitchen Cabinets
- Shop Equipment
- Chairs, Stools and Cabinets
- Lockers

**LYON** METAL PRODUCTS, INCORPORATED

General Offices: 1133 Monroe Avenue, Aurora, Illinois • Branches and Dealers in All Principal Cities



**A PARTIAL LIST OF LYON PRODUCTS**

| | | | | | | |
|---|---|---|---|---|---|---|
| • Shelving | • Kitchen Cabinets | • Filing Cabinets | • Storage Cabinets | • Conveyors | • Tool Stands | • Flat Drawer Files |
| • Lockers | • Display Equipment | • Cabinet Benches | • Bench Drawers | • Shop Boxes | • Service Carts | • Tool Trays • Tool Boxes |
| • Wood Working Benches | • Hanging Cabinets | • Folding Chairs | • Work Benches | • Bar Racks | • Hopper Bins | • Desks • Sorting Files |
| • Economy Locker Racks | • Welding Benches | • Drawing Tables | • Drawer Units | • Bin Units | • Parts Cases | • Stools • Revolving Bins |

# P&W




## CARBIDE GO AND NOT GO DUALOCK ADJUSTABLE *Thread Ring Gages*

ADJUSTABLE—
RELIEVED AT MAJOR DIAMETER—
CONVOLUTED—
PRECISION LAPPED—

## . . . FOR LOW-COST PRODUCTION GAGING

These long-wearing Pratt & Whitney Carbide Dualock Thread Ring Gages are especially suited for *dependable* checking of external threads on both long- and short-run work, whether used at the machine or at the inspection bench. Retaining the precisely lapped thread form for unusually long periods — these carbide ring gages result in substantial savings in gage costs and eliminate the ultimate scrapping of parts passed by steel ring gages worn "bellmouth" or "off-angle". Even on short runs, the saving in scrap cost alone often more than equals the extra cost of these P&W Carbide Dualock Thread Ring Gages.

## . . . FOR WORK HAVING CLOSE TOLERANCES

The great resistance to wear inherent in these Carbide Dualock Thread Ring Gages permits setting them to the full product limits, enabling users to disregard wear allowance usually applied to steel gages. The exclusive P&W precision lapping process produces a uniformly smooth surface over the entire thread flank, and corrects out-of-roundness and variation in thread angle.

We regularly furnish P&W Go and Not Go Carbide Dualock Thread Rings in the popular range of diameters and pitches in both American Standard and Unified Thread Forms. Modified Whitworth, Metric, etc., also can be furnished. For complete information and prices, contact our Branch Offices listed below:

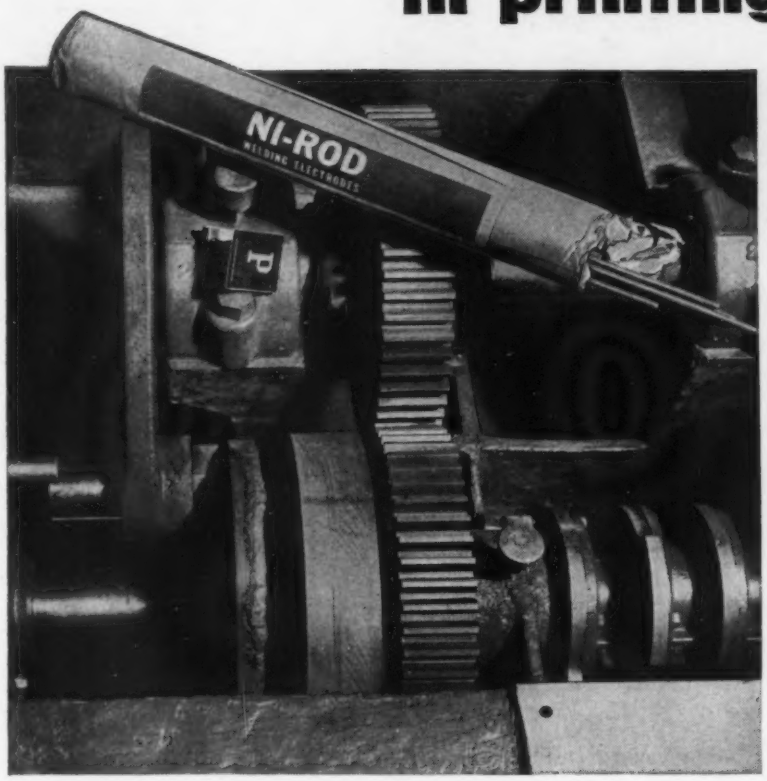
**Pratt & Whitney**

Division Niles-Bement-Pond Company
WEST HARTFORD 1, CONNECTICUT

BRANCH OFFICES AND STOCK AT

| | |
|---|---|
| BIRMINGHAM | 1716-19 Comer Bldg. |
| BOSTON | 238 Main St., Cambridge |
| CHICAGO | 565 W. Washington Blvd. |
| CINCINNATI | 236 East 9th Street |
| CLEVELAND | 1433 East 12th Street |
| DETROIT | 2836 E. Grand Blvd. |
| LOS ANGELES | 2675 Santa Fe Avenue |
| NEW YORK | 117 Liberty Street |
| PHILADELPHIA | 401 North Broad Street |
| PITTSBURGH | 613 Grant Bldg. |
| ROCHESTER | 89 East Avenue |
| ST. LOUIS | 725 Central Terminal Bldg. |
| SAN FRANCISCO | 1331 Howard Street |

# Ni-Rod *Ventured* - Time and Money *Gained* in printing press repairs




*A worn cast iron cam on this Miehle vertical press was built up with beads of NI-ROD without dismantling the gear box. The welder had no previous experience with metal arc welding.*

RECENTLY, a firm that specializes in the repair and reconditioning of worn printing machinery took a gamble . . . a small one, but it paid handsome dividends.

Much of their repair work consisted of brazing and gas welding broken cast iron frames and worn machine members. So welding was an old story to them. *But* . . . they had never tried metal-arc welding.

Then they heard about the fine performance of Ni-Rod* electrodes in cast-iron maintenance work. They decided to give them a trial. Result? Today they use Ni-Rod for most of their welding work. And like thousands of other shops, they find that Ni-Rod saves both time and money; gives better results with less effort.

Ni-Rod gives sound, non-porous, *machinable* welds in all grades of cast iron. Slag removal is easy, Ni-Rod is stable-arcing in all positions with either AC or DC current. Preheating or post-heating is seldom necessary . . . an important time-saving feature. You can use Ni-Rod for joining cast iron to steel, too.

Why not try Ni-Rod in your own shop . . . soon? Discover for yourself why *4 out of 5* shops re-order Ni-Rod, once they've tried it.

Your nearest INCO distributor stocks Ni-Rod in 3/32", 1/8", 5/32" and 3/16" diameters.

Write for your copy of the helpful new 8-page booklet: "*NI-ROD . . . a new electrode for any cast iron welding.*"



*This platen cam casting from a John Thompson press had two sections broken off. Both were restored by welding with NI-ROD.*




**THE INTERNATIONAL NICKEL COMPANY, INC.**
*67 Wall Street, New York 5, N. Y.*

*Reg. U. S. Pat. Off.




ACCREDITED DISTRIBUTOR
PARKER · KALON
PRODUCTS

# Why Industry's leading Distributors keep proved savings for you in stock

Your Distributor's stock of P-K Self-tapping Screws is a shelf full of savings for you. When you order, he delivers not simply screws, but a proved means of lowering assembly costs . . . as much as 50% or more.

Wherever your plant is located, in the United States or Canada, there's a Parker-Kalon Distributor nearby, ready to give you quick, helpful service. And you'll find he's the leading Distributor in your area, because, keenly aware of industry's needs, he offers those products which sell best because they serve most.

That's why he stocks and sells P-K Self-tapping Screws. He knows that, when you choose P-K, you get *more "know-how"*—Parker-Kalon originated the Self-tapping Screw and has been the leader with new designs ever since . . . *more "show how"*—P-K's staff of Assembly Engineers has helped solve nearly a million application problems . . . *more choice of types and sizes*—with a complete line of Self-tapping Screws for every metal and plastic assembly, P-K's advice is unbiased . . . *more exacting quality control*—P-K's investment in laboratory testing and inspection equipment is unsurpassed . . . *more production*—Parker-Kalon is the world's leading manufacturer of Self-tapping Screws.

Let a P-K Assembly Engineer help you find out how you can simplify assemblies, improve strength, save time, and lower production costs with the simpler P-K method. If you prefer, mail assembly details for recommendations. Parker-Kalon Corporation, 200 Varick St., New York 14, N. Y.

**REMEMBER . . . IF IT'S P-K . . . IT'S O.K.!**

**P-K®**

*The Original*

**PARKER-KALON SELF-TAPPING SCREWS**

**FOR EVERY METAL AND PLASTIC ASSEMBLY**



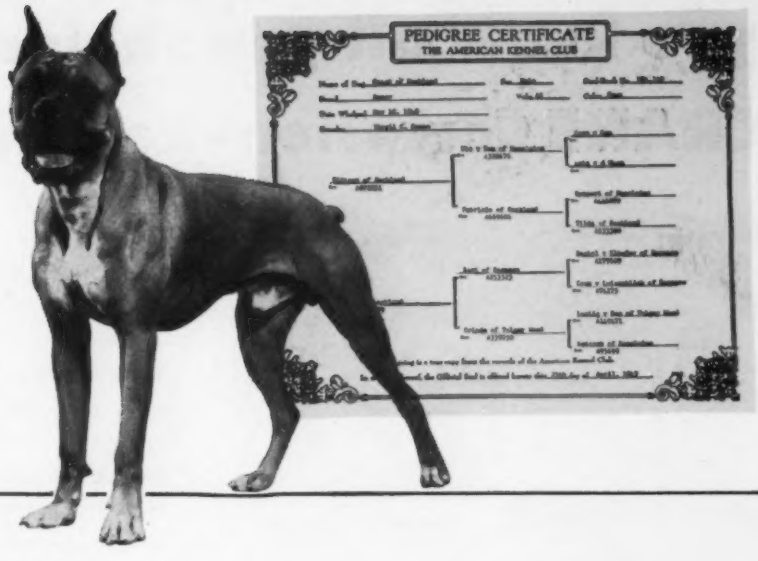

P-K Also Makes
*Cold-forged*




OTHER P-K PRODUCTS: Cold-Forged Socket Screws, Wing Nuts, Thumb Screws • Hardened Screwnails and Masonry Nails • Shur-Grip File and Solder Iron Handles • Metal Punches • Damper Regulators and Accessories



*Want Additional Product Information? See Page 19.*




**THE BOXER,** America's No. 1 favorite for 1949, gets his name from the fact he uses his front paws in much the same way as a human boxer when fighting. Coloring of coat ranges from fawn to brindle, but his muzzle is always black.

## Buyers Who Know

# Look at the Pedigree




THE UNION SHIELD is the pedigree mark of a box with 75 years of packaging leadership behind it.

That's why Standard Brands uses Union boxes to carry Royal Puddings —choice of millions—to dealers all over the country.

The Union shield means every step in the making, from tree to finished box, is tested and controlled by one management in America's largest integrated pulp-to-container plant.

Four modern box plants, five of the world's largest paper machines, and vast timber tracts are your guarantee of consistent quality, consistent service and fair price, today and in the future.

That's why every month more makers of famous brand products are shipping in Union boxes.

TRADE MARK UNION

*Dependable Packaging Since 1872*

# UNION Corrugated Containers

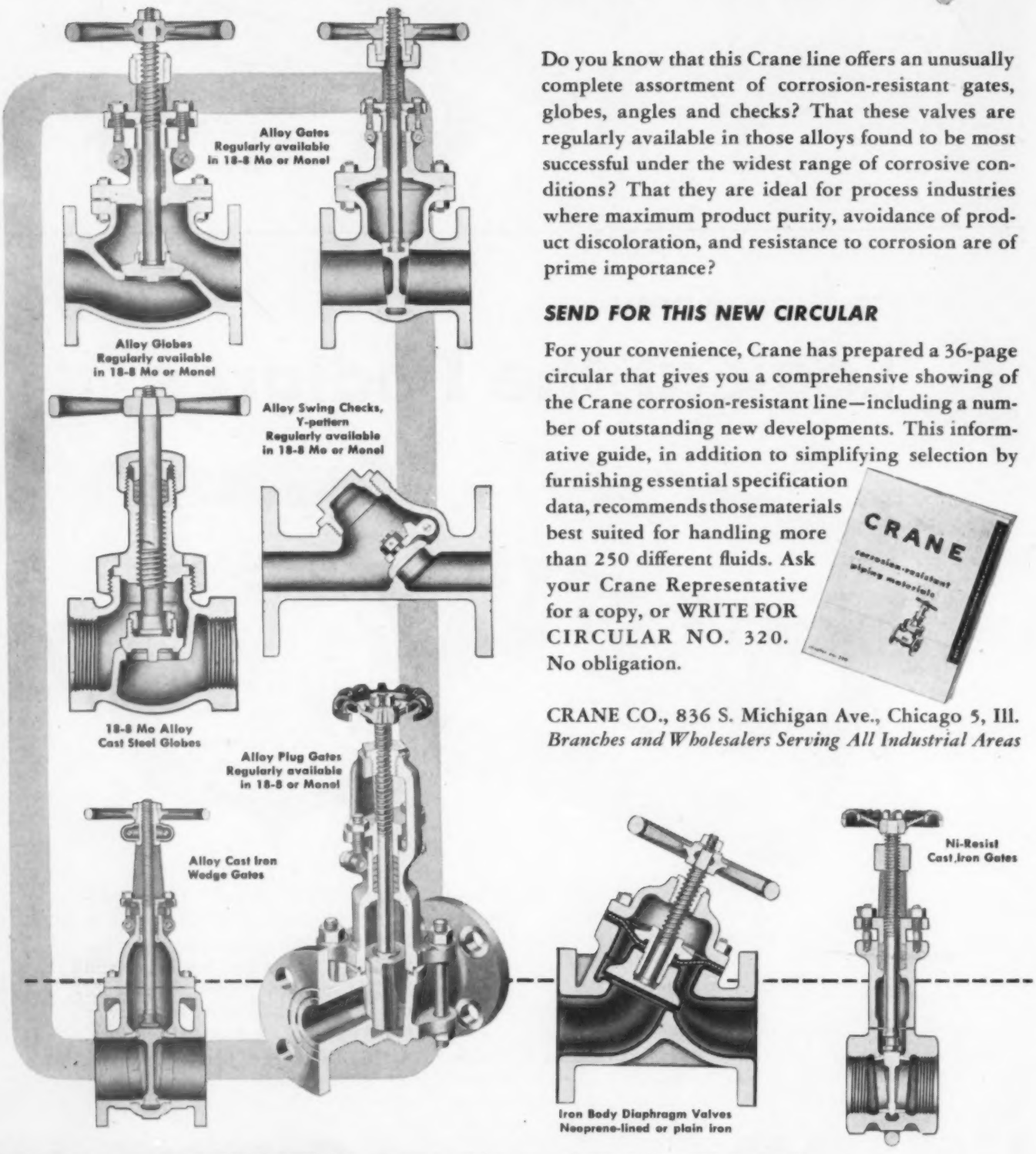
## UNION BAG & Paper Corporation

**Principal Offices: WOOLWORTH BLDG., NEW YORK 7, N. Y.**

***Corrugated Container Plants:* SAVANNAH, GEORGIA • CHICAGO, ILLINOIS • TRENTON, NEW JERSEY**


*Want Additional Product Information? See Page 19.*

# Do you know all you should about CRANE Corrosion-Resistant Valves ?




Do you know that this Crane line offers an unusually complete assortment of corrosion-resistant gates, globes, angles and checks? That these valves are regularly available in those alloys found to be most successful under the widest range of corrosive conditions? That they are ideal for process industries where maximum product purity, avoidance of product discoloration, and resistance to corrosion are of prime importance?

### *SEND FOR THIS NEW CIRCULAR*

For your convenience, Crane has prepared a 36-page circular that gives you a comprehensive showing of the Crane corrosion-resistant line—including a number of outstanding new developments. This informative guide, in addition to simplifying selection by furnishing essential specification data, recommends those materials best suited for handling more than 250 different fluids. Ask your Crane Representative for a copy, or WRITE FOR CIRCULAR NO. 320. No obligation.




CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
*Branches and Wholesalers Serving All Industrial Areas*

*EVERYTHING FROM . . .*

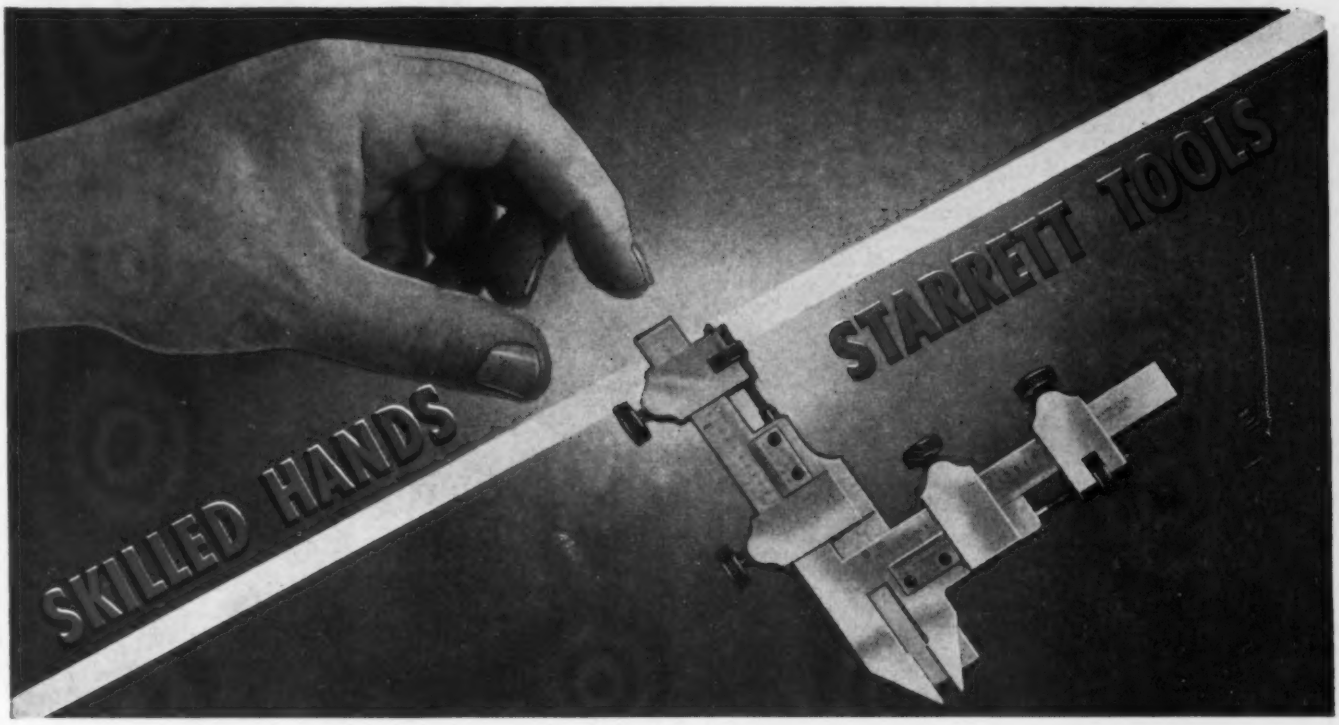
VALVES
FITTINGS
PIPE

# CRANE

PLUMBING
AND
HEATING

*FOR EVERY PIPING SYSTEM*

# AN UNBEATABLE COMBINATION...

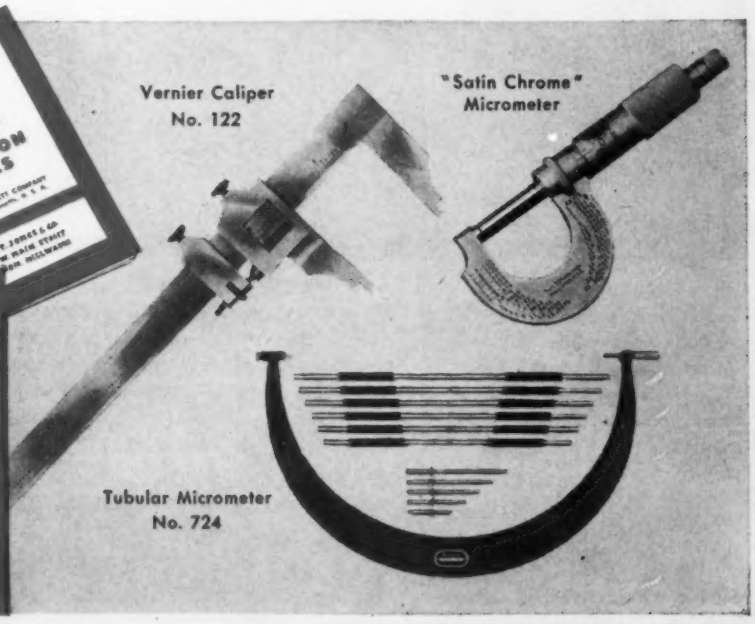



STARRETT Tools in the hands of skilled craftsmen make a combination that insures the highest order of accuracy and fine workmanship. Since 1880, STARRETT has pioneered in the development of precision measuring tools . . . now makes more than 3000 items that contribute to better, faster, lower cost precision mass production. As the "World's Greatest Toolmakers", The L. S. Starrett Company continues to lead in the development of new and finer tools and to raise the standard of precision wherever men work with skill and accuracy.

**NEW TOOLS CATALOG**

Describes and illustrates dozens of new and improved Starrett Tools. Send for your free copy. Ask for New Tools Booklet P




TRADE MARK
Starrett
REG. U. S. PAT. OFF.

*Standard of Precision*

MECHANICS' HAND MEASURING TOOLS AND PRECISION INSTRUMENTS · DIAL INDICATORS STEEL TAPES · HACKSAWS AND BAND SAWS PRECISION GROUND FLAT STOCK

*Buy Through Your Distributor*

**THE L. S. STARRETT CO.** · *Worlds' Greatest Toolmakers* · **ATHOL, MASSACHUSETTS, U.S.A.**

# NEW

## *AO R5000 Line of Twin Cartridge RESPIRATORS*

**(7 RESPIRATORS—1 FACE PIECE)**



The R5000 line with Interchangeable, Threaded Cartridges or disc filters offers the maximum in protection, convenience and comfort against dusts, gases and vapors. With a single face piece the equipment quickly converts to any of seven respirators for the protection required.



**NEW CARTRIDGES—** Use of wider cartridges results in decreased air velocity and lower resistance. Threaded cartridges screw directly into retainer assembly for positive gas-tight seal. No cover or inner ring required.

**NEW FILTER RETAINER ASSEMBLY** — Accommodates either revolutionary flat disc AO chemically treated felt filters or chemical cartridges.

**NEW FLEXIBLE FITTING BRACE**—Slightest hand pressure on brace shapes face piece to wearer's features. Stays put, once adjusted. Headband is indirectly joined to brace — pressure pull cannot distort pliable rubber face piece.

**INCREASED VISUAL AREA—** Results from the considerably thinner cartridge scientifically located in a lower position. Wearers both *see* and *do* their work better.

**NEW FACE PIECE** — Provides comfortably snug fit which prevents leakage.

**OTHER FEATURES** — New Port and Valve design for positive operation, superior drainage and prevention of snagging on clothes or face . . . double length rubber headband for "storing" respirator around neck . . . auxiliary filters available to lengthen cartridge filter life against dusts and paint mists, etc. . . . sanitary, washable facelets.

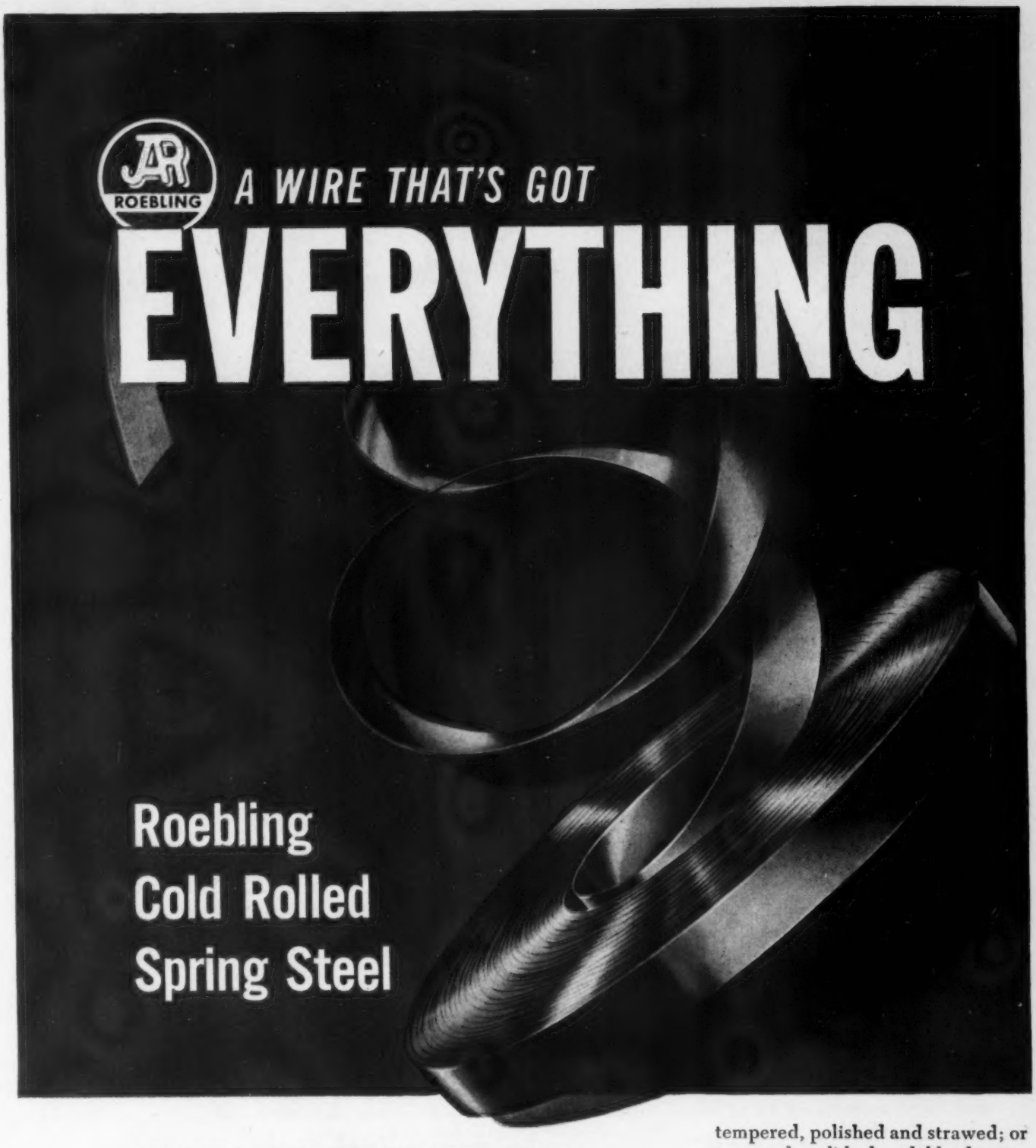
**Your AO Safety Products Representative can supply you**

American Optical
COMPANY
SAFETY PRODUCTS DIVISION

*Southbridge, Massachusetts • Branches in Principal Cities*



*Want Additional Product Information? See Page 19.*




### *QUALITY THAT BRINGS ECONOMY*

YOU KNOW what happens when you use wire uniform in gauge, grain, analysis, temper and finish. You save time and money... production goes up . . . stoppages and rejects come down. And those are the reasons why more and more manufacturers are adopting Roebling Cold Rolled Spring Steel.

With carbon content above 0.40%, you can now get Roebling Cold Rolled annealed and hard rolled untempered in bright finish. In the higher carbon ranges it is available tempered, in scaleless tempered; tempered and polished; tempered, polished and strawed; or tempered, polished and blued.

Have your Roebling representative help you select the *right* cold rolled spring steel, or round or shaped wire, for outstanding performance and worthwhile economy on your production lines and in your products. John A. Roebling's Sons Company, Trenton 2, New Jersey.

*WRITE OR CALL THE ROEBLING REPRESENTATIVE AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE*

*Atlanta,* 934 Avon Ave. ★ *Boston,* 51 Sleeper St. ★ *Chicago,* 5525 W. Roosevelt Rd. ★ *Cleveland,* 701 St. Clair Ave., N. E. ★ *Denver,* 1635 17th St. ★ *Houston,* 6216 Navigation Blvd. ★ *Los Angeles,* 216 S. Alameda St. ★ *New York,* 19 Rector St. ★ *Philadelphia,* 12 S. 12th St. ★ *Pittsburgh,* 855 W. North Ave. ★ *Portland, Ore.,* 1032 N. W. 14th Ave. ★ *San Francisco,* 1740 17th St. ★ *Seattle,* 900 First Ave.

**ROEBLING**

☆ A CENTURY OF CONFIDENCE ☆


*Want Additional Product Information? See Page 19.*




# "Here's what I count on ... to keep me on top of my job!"

JOE, here, has a mighty dependable assistant in this Veeder-Root High-Speed Predetermining Counter. He pre-sets one bank of wheels to the exact number of pieces he needs on any run. Then he starts his high-speed machine *and forgets it* . . . or does other work! No nerve-strain. No eye-strain. No guesswork. *And no waste* . . . for the counter signals him or acts to stop the machine right on the button, without either shortage or surplus.

Yes, among the many economies and advantages of Veeder-Root Counters, you can count on them to boost workers' morale and keep it at high level. That's one of the reasons why management and plant operating heads are coming more and more to specify production machines and equipment featuring *built-in* Veeder-Root Counters. And *that's* why it's smart salesmanship to build Veeder-Root Counters into *your* product . . . to bring a new utility to your customers. But how to do it? That's for us to show you. Just write.

**VEEDER-ROOT INCORPORATED, HARTFORD 2, CONNECTICUT**

**No. 1239**

**HIGH-SPEED PREDETERMINING COUNTER**

is furnished with electrical contact or mechanical knock-off lever. Speeds up to 2500 counts per minute. This is one of scores of V-R Standard Counters. Write for 8-page Condensed Catalog to Veeder-Root Incorporated, Hartford 2, Conn.




# Veeder-Root COUNTERS

*In Canada:* Veeder-Root of Canada, Ltd., 955 St. James Street, Montreal 3
*In Great Britain:* Veeder-Root Ltd., Kilspindie Rd., Dundee, Scotland



### *Improve Your Packages with*
## FLEXPAK*
### *H & D CORRUGATED Wrapping Paper*

If a product is worth wrapping, it deserves FLEXPAK*, a flexible corrugated "wrapping paper" that hugs the product and cushions it on all sides to protect it from shock, abrasion, puncture, corrosion, dirt and grit. Used just like wrapping paper, FLEXPAK* reduces breakage, saves packaging costs, conserves materials, cuts packing time. Your package is smaller, neater, lighter. Ask for a sample.

*REG. U. S. PAT. OFF.

REG. U. S. PAT. OFF.

H&D

# BOXES

FOR MORE INFORMATION, WRITE

## HINDE & DAUCH

*Authority on Packaging*

***Executive Offices: 4905 Decatur St., Sandusky, Ohio***

**FACTORIES IN:**

Baltimore 13, Md. • Buffalo 6, N. Y. • Chatham, Ontario
Chicago 32, Illinois • Cleveland 2, Ohio • Detroit 27, Mich. • Gloucester, N. J. • Hoboken, N. J. • Kansas City 19, Kansas • Lenoir, N. C. • Montreal, Quebec
Richmond 12, Va. • St. Louis 15, Mo. • Sandusky, Ohio
Toronto, Ontario • Watertown, Mass.

## *Designed for Protection . . . and SALES!*




### CLEVER MERCHANDISING
### *. Intelligent Packaging*

A novel idea, such as the promotion of this "Father's Box," catches popular fancy with the help of good packaging. This H & D box is an example of good package design and colorful printing. It protects the merchandise in transit and displays it as an attractive gift. Give your product the advantages of planned packaging and watch sales climb!



### CONCENTRATED WEIGHT
### *. . Shipped Safely in Corrugated*

This electric motor, small as it is, requires more than casual packaging attention. It must have a super-strength box, especially designed to accommodate the uneven contour of the housing. H & D package engineers worked out this low-cost, easy-to-pack, two-piece unit, adding interior packing to give complete protection against all shipping hazards. Let H & D solve your packaging problem!

# WISSCO ROPE WIRE



**UNIFORM**

**STRONG**

**TOUGH**

Wissco Rope Wire has long been the choice of many rope manufacturers. And their choice is a logical one, for this Wissco specialty wire possesses the highest possible degree of hardness, strength, toughness and fatigue-resisting qualities.

By making our own iron and steel, we can be certain that harmful proportions of phosphorus and sulphur are avoided, and that proper quantities of carbon, manganese and silicon are blended to produce the correct steel for rope wire. Then we roll, draw and further process it so skillfully that it meets the most exacting specifications.

The same careful control and skilled craftsmanship is used in producing *all* Wissco Specialty Wires. For, as makers and workers of wire, we know that it must be uniform in size, tensile, stiffness and ductility. Then it's easier on wire working machines, and customers are satisfied. We can meet your specifications for high or low carbon steel wire; round or shaped; in a wide variety of sizes, tempers, grades and finishes. Let us know your requirements.

**WISSCO** *Wire*

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION · THE COLORADO FUEL AND IRON CORPORATION

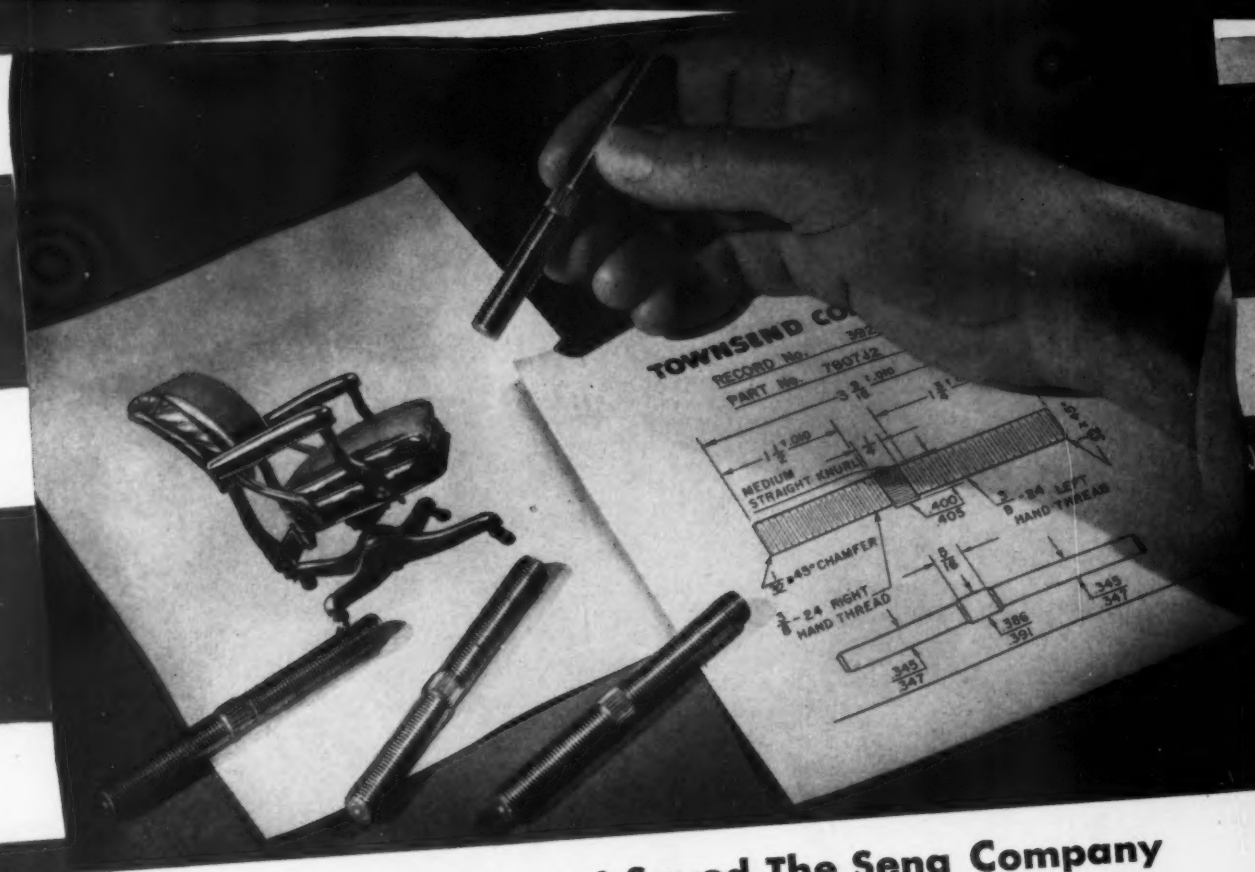
WIRE SALES OFFICE—361 DELAWARE AVE., BUFFALO 2, N. Y.

EXECUTIVE OFFICE—500 FIFTH AVE., NEW YORK 18, N. Y.

SALES OFFICES—BOSTON · CHICAGO · DENVER · DETROIT · NEW YORK · PHILADELPHIA

PACIFIC COAST SUBSIDIARY—THE CALIFORNIA WIRE CLOTH CORP., OAKLAND 6, CAL.

CF&I




# Here's How Townsend Saved The Seng Company $27.63 Per Thousand On One Cold Headed Part

This is an example of how a Chicago manufacturer, *who might have been you*, saved a large amount of money through the use of a Townsend cold headed part and thereby produced a better product for less money. The threaded adjusting screw (illustrated above) for the tilt back of the Seng action control for executive chairs is now being produced at Townsend by cold heading, knurling and roll threading for only $16.87 per thousand. The lowest price quoted for screw machine production was $44.50. This clear saving of $27.63 per thousand is important because Seng chair action control production is extremely high. Not only that, the Townsend part, being cold formed, is stronger than a part machined from bar stock and the roll threads are tougher and more uniform than machined threads. This gives The Seng Company an adjustment screw that works easily and helps produce a better chair at less cost.

This is not an isolated case with Townsend engineered parts and fasteners. It is typical of how Townsend helps save money and time by working closely with manufacturers in designing parts for many applications. Townsend parts and fasteners are cold headed, pointed, machined, drilled, slotted, trimmed, roll threaded, extruded, pierced, knurled, bent or flattened. They are produced in carbon, alloy and stainless steels—in brass, bronze, copper, aluminum—in a variety of platings and finishes.

To find out how to reduce costs and improve your products with Townsend cold headed parts send us a sample or sketch of the parts you need. Our engineers will gladly give you an estimate without obligation.

Call or write today to:

**Townsend**

COMPANY — ESTABLISHED 1816

New Brighton, Pa.

Chicago 38, Ill.

# it's paper

## . . . BUT LONG HOURS OF "SQUEEZING" WON'T BREAK IT!



Long ago Riegel developed a special paper for the bellows of toy accordions . . . a paper that would take thousands of "squeezes" without breaking. This same paper soon found many industrial uses where similar properties were needed.

It's only one of more than 600 different Riegel Papers—many with technical properties that would surprise you. Perhaps one of them can help you. If not, we can probably create a new paper . . . "tailor-made" to your most exacting requirements.

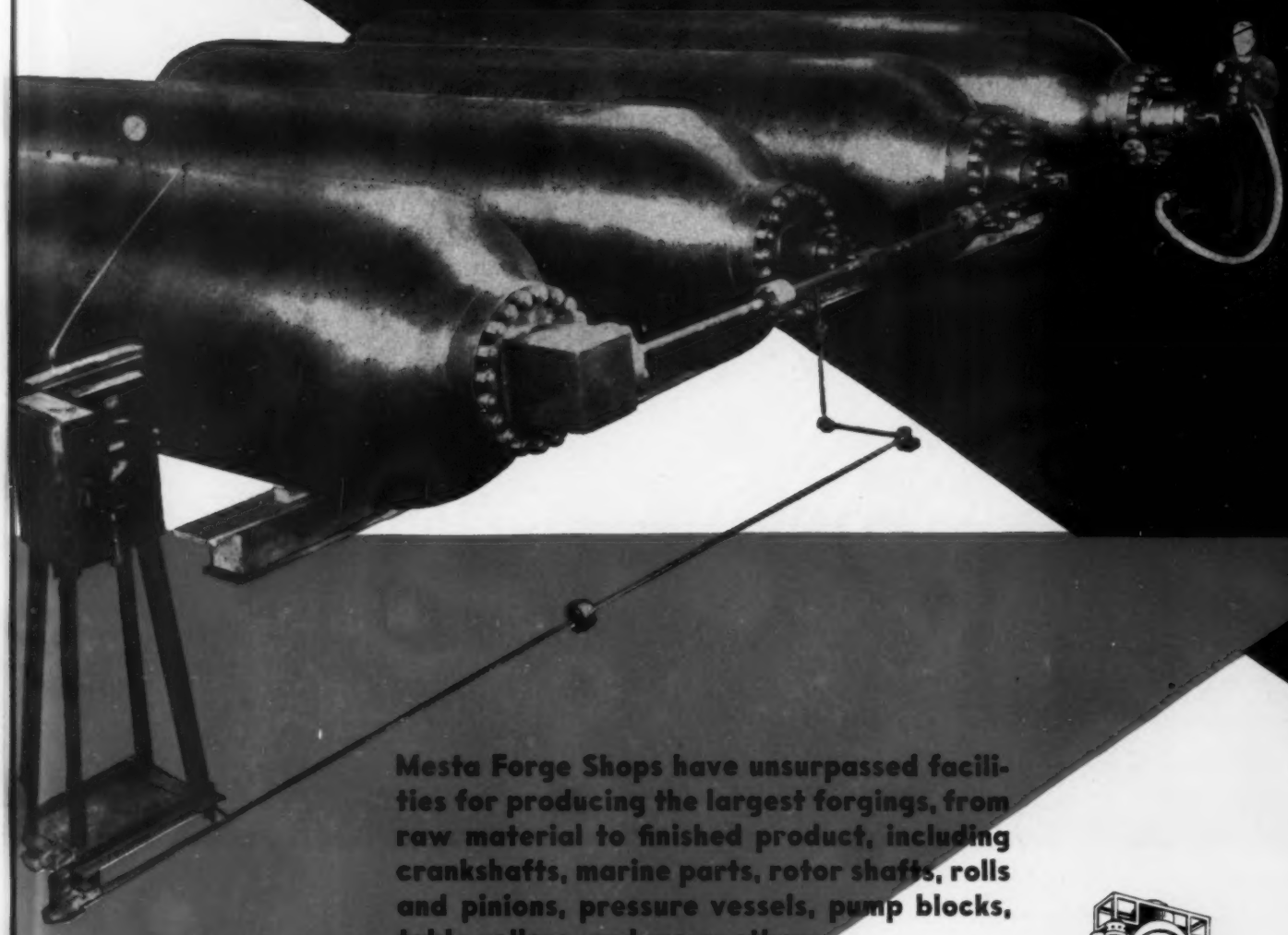
Just tell us what you are looking for, or send us a sample. If we can't make it, we will gladly tell you who can.

**RIEGEL PAPER CORPORATION**
**342 MADISON AVENUE, NEW YORK 17, N. Y.**

# Riegel

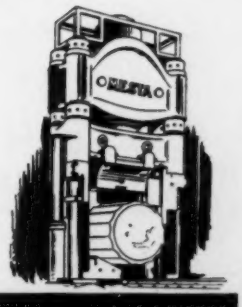
**• TAILOR-MADE PAPERS FOR INDUSTRIAL USE •**

# MESTA forgings



Mesta Forge Shops have unsurpassed facilities for producing the largest forgings, from raw material to finished product, including crankshafts, marine parts, rotor shafts, rolls and pinions, pressure vessels, pump blocks, table rollers, and many others.

The four large, one-piece, steel pressure vessels shown were forged in the Mesta Shops and are being hydrostatically tested.




DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

**MESTA MACHINE COMPANY**

PITTSBURGH, PA.

JR ROEBLING

WHEN TO SPECIFY

# I.W.R.C.

(INDEPENDENT WIRE ROPE CORE)



Preformed "Blue Center" Wire Rope

## *PERFORMANCE-PROVEN WITH PLANT MEN*

IN THE TOUGH SPOTS, rope with an Independent Wire Rope Core gives best and longest service! I.W.R.C. is outstanding where operating pressures are high; where heat resistance, additional strength, or minimum stretch are essential. But remember this . . . *the same features that make* I.W.R.C. *best for the tough spots help make it the longest-performing and most economical specification for a wide range of applications!*

For use with locomotive cranes, Roebling 6 x 19 Preformed "Blue Center" Steel Wire Rope with I.W.R.C. is your most satisfactory choice—safe, easy to handle, and saving real wire rope dollars . . . All Roebling Slings employ rope with I.W.R.C. to afford top resistance against compression.

Have your Roebling Field Man help select the *right* rope for your special requirements. John A. Roebling's Sons Company, Trenton 2, New Jersey.

*WRITE OR CALL THE ROEBLING REPRESENTATIVE AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE*

*Atlanta*, 934 Avon Ave. ★ *Boston*, 51 Sleeper St. ★ *Chicago*, 5525 W. Roosevelt Rd. ★ *Cleveland*, 701 St. Clair Ave., N. E. ★ *Denver*, 1635 17th St. ★ *Houston*, 6216 Navigation Blvd. ★ *Los Angeles*, 216 S. Alameda St. ★ *New York*, 19 Rector St. ★ *Philadelphia*, 12 S. 12th St. ★ *Pittsburgh*, 856 W. North Ave. ★ *Portland, Ore.*, 1032 N.W. 14th Ave. ★ *San Francisco*, 1740 17th St. ★ *Seattle*, 900 First Ave.

ROEBLING

☆ A CENTURY OF CONFIDENCE ☆



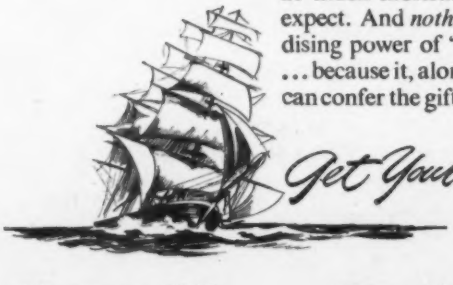
**FROM HEAD TO TOE...**

# BRASS makes her glow!

Smartest style sensations (*look around you and see*) are the luminous accents of rich, well-bred Brass . . . on hats, dresses, handbags, cosmetics, lighters, pens and pencils, shoes, slips . . . and, yes, the invisible garter-clips.

And *why* Brass? Because the gracious golden-yellow alloy bends itself so readily to women's changing whims! Brass naturally assumes delicate shapes, intricate ornamentation, elegant airs . . . without half as much fabrication-cost as you might expect. And *nothing* equals the merchandising power of "that old *Brass* magic" . . . because it, alone of all precious metals, can confer the gift of *high style at low cost.*

As for Brass . . . Bristol has been making top-quality Brass for "buttons and bows" for long enough to know how to make it for that purpose *better than most.* But be it Brass for buttons or dynamos, you can get the Brass you need, and just as fast as you need it, from one of the oldest (*yet most modern*) mills in the country: The BRISTOL BRASS CORPORATION, Bristol, Conn., organized in 1850. 15 Park Row, N. Y. City; 912 Morris Bldg., 1421 Chestnut St., Philadelphia, Pa.; 418 Frick Bldg., Pittsburgh, Pa.; 1607 So. Broadway, Dayton, O.; 703 Temple Bldg., Rochester, N. Y.; 538 Hospital Trust Bldg., Providence, R. I.



*Get Your Brass* **"BRISTOL FASHION"**

(ALL PROMPT AND SHIPSHAPE)

FROM THE BRISTOL BRASS CORPORATION

# "We Reduced Costly and Troublesome Shutdowns Due To Needless Blows On A Circuit Serving 3 Arc Welders"

*When We Installed..."*

"In the Truck Service Garage in Casper, we have the job of servicing three 220 volt arc welders connected to a 60 ampere switch. Frequently all these welders are thrown on the line at the same time.

"This causes a heavy rush of current that generally blew the 60 ampere renewable fuses we formerly used to protect the circuit.

"The resulting shutdowns were very costly to our customer and troublesome to us.

"During 1947 we decided to see if Fusetron dual-element fuses would help cure the trouble and so installed three 60 ampere ones in the switch.

"That was many months ago but so far not one Fusetron fuse has blown on the starting current of the welders.

"You can take it from us Fusetron dual-element fuses really do eliminate needless shutdowns."

*Geo. Forster,* President
FORSTER ELECTRIC COMPANY,
Casper, Wyoming



(FUSETRON is a trade mark of the Bussmann Mfg. Co., Division of McGraw Electric Co.)

## *Facts About FUSETRON Dual-Element FUSES*

The fuse link element opens on short-circuit — the thermal cutout element protects on overloads — the result, a fuse with tremendous time-lag and much less electrical resistance.

They have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.

Made to the same dimensions as ordinary fuses — fit all standard fuse holders.

Obtainable in all sizes from 1/10 to 600 ampere, both 250 and 600 volt types. Also in plug types for 125 volt circuits.

Their cost is surprisingly low.

# Fusetron DUAL-ELEMENT Fuses

**with their**

# 10 Point Protection

1. Protect against short-circuits.
2. Protect against needless blows caused by harmless overloads.
3. Protect against needless blows caused by excessive heating — lesser resistance results in much cooler operation.
4. Provide thermal protection — for panels and switches against damage from heating due to poor contact.
5. Protect motors against burnout from overloading.
6. Protect motors against burnout due to single phasing.
7. Give DOUBLE burnout protection to large motors — without extra cost.
8. Make protection of small motors simple and inexpensive.
9. Protect against waste of space and money — permit use of proper size switches and panels.
10. Protect coils, transformers and solenoids against burnout.



## STOP *Wasting Time and Money* —

FUSETRON
TRUSTWORTHY NAMES IN ELECTRICAL PROTECTION
BUSS

**FUSETRON Dual-Element Fuses Give ALL-PURPOSE PROTECTION**

One needless shutdown — or one lost motor — or one destroyed switch or panel — may cost you far more than replacing every ordinary fuse with a FUSETRON dual-element fuse.

Don't risk such losses — protect yourself by installing a FUSETRON dual-element fuse in every set of fuse clips throughout the entire electrical system.

(FUSETRON is a trade mark of the Bussmann Mfg. Co., Division of McGraw Electric Co.)

Bussmann Mfg. Co., University at Jefferson St. Louis 7, Mo. (Division McGraw Electric Co.)

Please send me complete facts about FUSETRON dual-element Fuses.

*Name*_____

*Title*_____

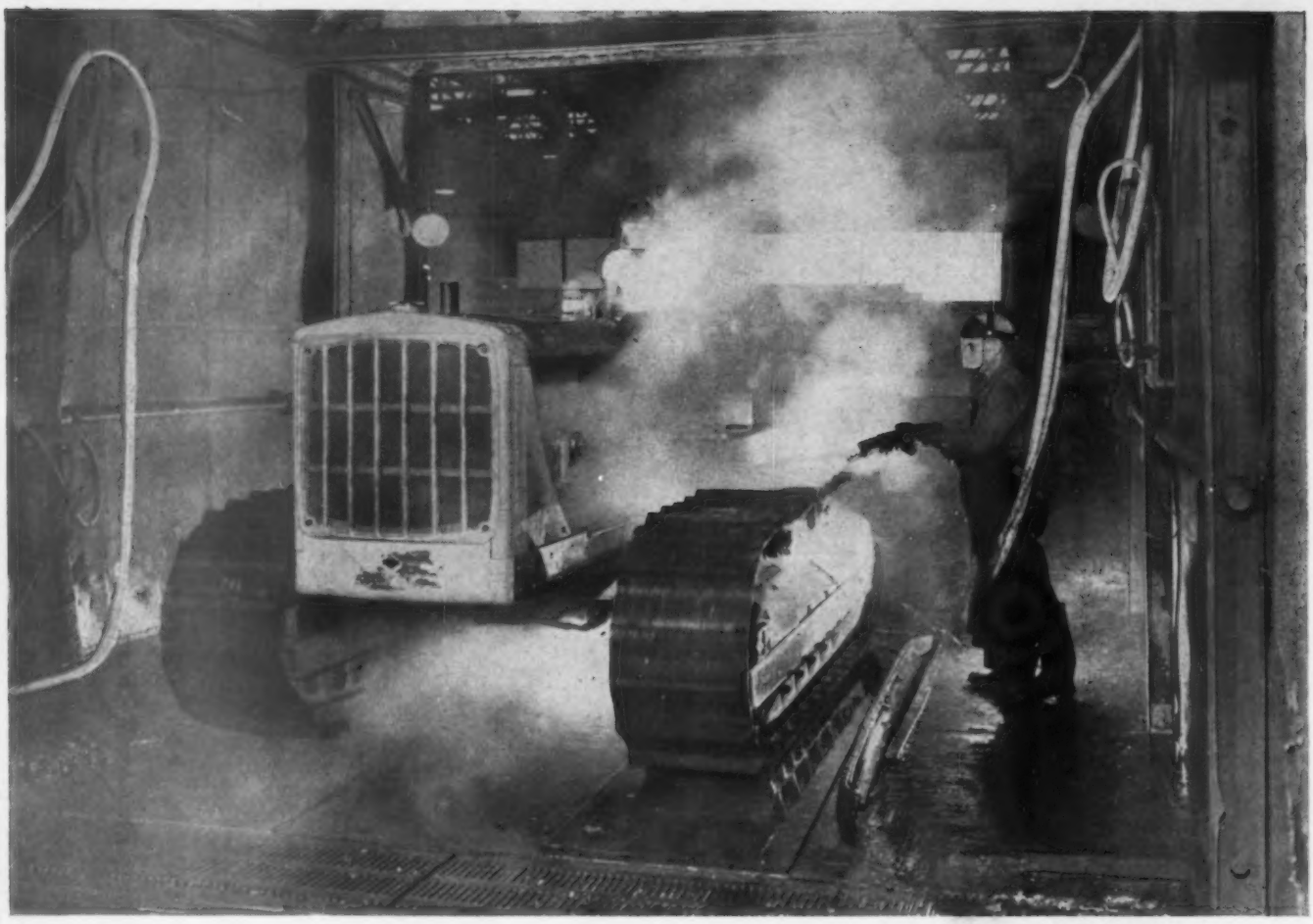
*Company*_____

*Address*_____

*City & Zone*_____ *State*_____ 1149



***Want Additional Product Information? See Page 19.***



*Courtesy of Caterpillar Tractor Co.*

# Republic Steams "Caterpillar" Diesels

## *. . . Republic Hose is used in every industry*

Tough "Caterpillar" Diesel Tractors are perfectly groomed.

Each one is blasted by steam before the final protective paint dresses them up and protects their hides. Republic's Steam Hose is used for this cleaning job, and Caterpillar Tractor Co. has found Republic Rubber's E-101 Steam Hose to be highly satisfactory in maintaining the production schedule of its products.

"I am not surprised," says Mr. John H. Flora, president of Hagerty Brothers Company, the Republic Distributor in Peoria, Illinois. He knows that Republic Rubber Products are built ruggedly, and it just seems natural to him that these tough tractors should be serviced by Republic's sturdy E-101 Hose.

The body of Republic Steam Hose is constructed with plies of strong, insulated hard-woven duck which is applied on a bias for maximum pressure resistance and flexibility. The thick heat-resisting tube retains its flexibility under severest conditions. A tough, abrasion-resistant cover protects the hose from service wear and unusual punishment.

Republic, 47 years experienced, serves all industries and is qualified to aid *you* in any problem concerning Mechanical Rubber Goods.

Look in the classified section of your telephone directory for your local Republic Distributor's name, or write direct.



*Mr. John H. Flora, Pres. & Treas. Hagerty Brothers Company Peoria, Illinois*

★

*Pioneers in the use of COLD RUBBER*

**REPUBLIC RUBBER DIVISION**

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN, OHIO

Lee Deluxe Tires & Tubes . . Conshohocken, Pa.

MECHANICAL RUBBER GOODS BY

**REPUBLIC RUBBER DIVISION**




To help you take full advantage of more efficient machines and new materials, Brown & Sharpe engineers are constantly testing and developing new designs in cutters. In the development of the most practical cutters, diversified manufacturing in Brown & Sharpe's own plant provides an exhaustive testing ground.

Brown & Sharpe cutters have many advanced features of design that permit highly efficient operation. Their dependable performance assures *more* as well as *better* work.

Get fully acquainted with all the advantages of Brown & Sharpe cutters—they cost you less in the long run. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

**• A COMPLETE LINE OF MILLING CUTTERS**

**Plain Milling**
**Helical Plain Milling**
**Side Milling**
**Staggered Tooth Side Milling**
**Inserted Tooth**
**Angular**
**Convex and Concave**
**Screw Slotting**
**Sprocket Wheel**
**Gear**
**End Mills**
**Metal Slitting Saws**

*We urge buying through the Distributor*

# BROWN & SHARPE CUTTERS B·S

# "Clean As A Whistle"
## TO MAKE and TO USE



***...and you can say that of any vac built with American Phillips Screws***

**CLEANER PRODUCTION:** No scarred parts, no slashed hands, no floors littered by fumbled screws. For when an American Phillips Screw is put on the point of its 4-winged driver . . . then they become one straightline unit until the recessed screwhead is turned up flush and tight . . . the *first* time, *every* time. Saves rejects, saves screws, *saves time up to 50% over out-of-date slotted screws.*

**CLEANER SALES:** Buyers of modern, top-quality products know the buy-sign of the universal Phillips crossed recess on everything from their automobiles to their golf clubs. To them, the Phillips recess means that when a product is so put together, *it stays put.* To you, it means fewer returns and fewer free servicings, especially where vibration is involved. So remember, from both viewpoints . . . production and sales . . . *American Phillips Screws always cost least to use.*

**AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND**
*Chicago 11:* 589 E. Illinois St. Norristown, Pa. *Detroit 2:* 502 Stephenson Building




# AMERICAN PHILLIPS *Screws*



**ALL TYPES**
**ALL METALS:** Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)



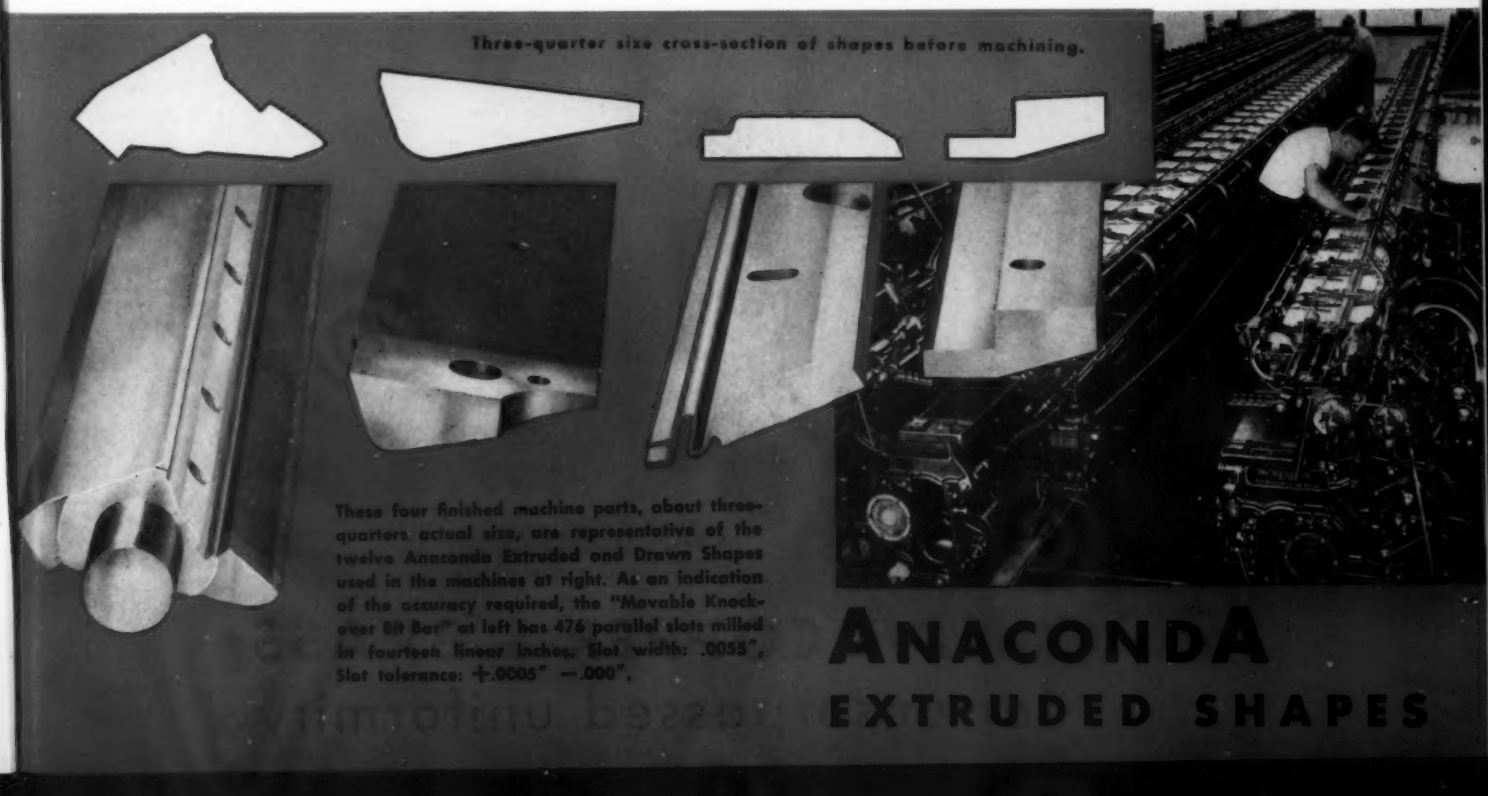

# It takes 1,568,586 loops (AND FORTY MINUTES) to make a single 51-gauge stocking

High-Production Full-Fashioned Knitting Machines, 52'9" long and capable of knitting thirty stocking blanks simultaneously, are produced by the Textile Machine Works, Reading, Pa. With a total of 14,280 needles, each of its thirty sections lays a course of 476 loops in less than a second . . . yet it takes close to forty minutes to knit the one-and-a-half million loops required for a single 51-gauge stocking blank.

With so many moving parts, it wasn't easy to obtain the necessary smoothness of operation at high speeds. Precision, balance and long-wearing-and-bearing qualities had to be built into each of the machine's components—420 of which are made of twelve different Anaconda Extruded and Drawn Brass Shapes.

These shapes, made of wrought metal, are tough, strong, dense-grained and smooth-surfaced, with cutting characteristics that make them ideal for such precision-machined parts as those illustrated below. Besides, these parts are now being produced at a saving of 25 to 30% over the cast-brass sections they replaced.

The cost-paring advantages of Anaconda Extruded and Drawn Shapes are not limited to the textile industry. Produced in copper, brass, bronze or special copper alloys, they are available in an infinite variety of cross-sections. For further information, write to The American Brass Company, General Offices: Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario. 49109





# There's nothing skin-deep about the beauty of this lamp

Too bad we don't have X-ray eyes . . . we'd be spared the disappointment of learning, too late, that the things we thought were solid brass—are not.

Not so with the "China-Brass" lamp illustrated above. It's typical of the entire line of solid brass table lamps, floor lamps, and smokers made by the Oxford Metal Spinning Co., Inc. of Philadelphia, one of the country's foremost lamp designers and manufacturers.

As a purchaser, you'd be well pleased with its handcrafted beauty—the durability of its solid brass construction—and, of course, its moderate price.

As its manufacturer, you'd quickly recognize the economy of using solid brass for its metal components. For in this plant—which annually produces hundreds of *different* patterns, shapes, and designs—not a single stamping or drawing die can be found. Instead, coils of Anaconda Spinning Brass are sheared to squares, centerpunched, cut to circles, and spun by hand. In this way, several hundred duplicates of an original design can be completed before a toolmaker could get halfway through a set of dies. Savings are passed on to the customer.

Using brass of just the right composition, grain size and temper is an important part of this low-cost, high-quality program. That's why "Oxford" consistently specifies "Anaconda Brass"—made by The American Brass Company, General Offices, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Limited, New Toronto, Ontario.



Discs of Anaconda Sheet Brass and cut-to-length sections of Anaconda Seamless Tubes are used exclusively in spinning the Oxford lamp components illustrated.

**ANACONDA COPPER & BRASS**

**for unsurpassed uniformity**



# Designed for YOUR Product

SHIPPING TRADE SUPERSTRONG MARK CONTAINERS REG. U.S. PAT. OFF.

WIREBOUND BOXES and CRATES
WOODEN BOXES and CRATES
CORRUGATED FIBRE BOXES
BEVERAGE CASES
STARCH TRAYS
PALLETS

The SUPERSTRONG box or crate for your product is on our designer's table.

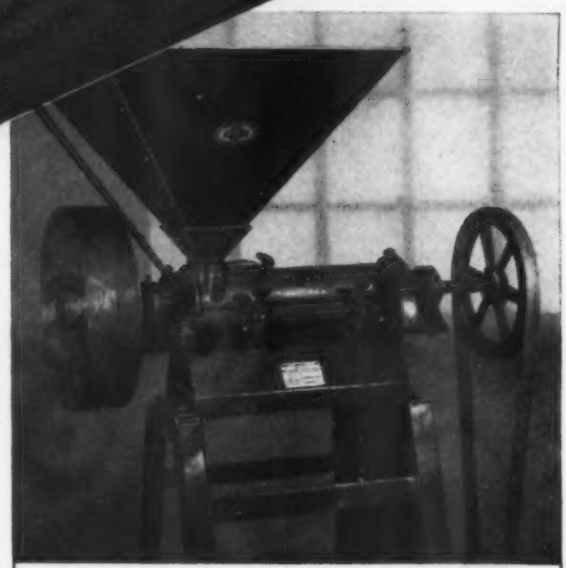
SUPERSTRONG engineering and production "know-how"—based on nearly a century of experience—can create the type and size of shipping container that gives you greater overall economy through efficient construction, reduced space requirements, less shipping damage.

No obligation—just an opportunity to let us give you all details.

**RATHBORNE, HAIR AND RIDGWAY COMPANY**
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Third in a series of
Unusual Abrasive
Products Operations

# GETTING WHEAT READY FOR BREAKFAST!



Photograph, Courtesy of Marcus Mason & Co., Inc.

● Bay State abrasive shell liners are used in hulling machines for removing the bran and shining the wheat grain before it is made into puffed wheat.

Whatever YOUR grinding problem may be, BAY STATE can solve it . . . fast. Possibly the exact specifications to meet your requirements can be supplied directly from large stocks either in Westboro, branch warehouses, or from our distributors strategically located throughout the United States.

Send us your grinding problems. We can help you.

**BAY STATE ABRASIVE PRODUCTS CO.**
**Westboro, Massachusetts, U. S. A.**
*Branch Offices and Warehouses—Chicago, Cleveland and Detroit*
*Distributors—All Principal Cities*

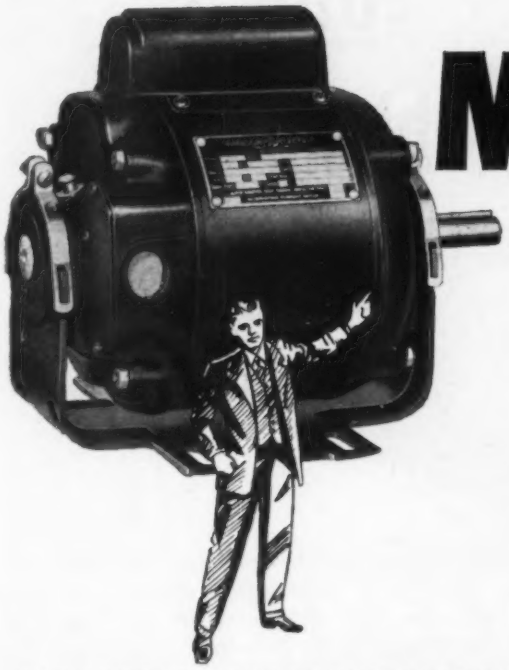



*Top Performance Consistently Duplicated*

# YOURS for the asking ...

## EMERSON-ELECTRIC

# MOTOR FACTS



***If You Have Applications for Motors, 1/20 to 5 H. P., You Can Use One or More of These Practical Data Bulletins***

Here's motor information that Electrical Engineers and Appliance Manufacturers can *use!* Packed with pertinent specifications, construction details, and performance data, these Emerson-Electric Motor Bulletins furnish an authoritative reference guide in the selection of motors best suited to your applications. Emerson-Electric Motors are built to NEMA dimensional and operating standards. A request on your letterhead will bring you the Bulletins desired.

***Write: The Emerson Electric Mfg. Co., St. Louis 21, Mo.***



No. 110-P

### CAPACITOR-START MOTORS

Complete information on a full line of general-purpose motors from 1/6 to 3/4 H.P. Suitable for many types of pumps, compressors, machine tools, blowers, and other applications requiring a single-phase fractional H.P. motor.

### FAN-DUTY MOTORS

America's leading fan manufacturer furnishes reliable finger-tip information on a complete fractional H.P. motor line, specially designed for applications with a fan blade mounted directly on the motor shaft. Single- and two-speed split-phase, split-capacitor, polyphase, and D.C. types, with specifications.



No. 113-P



No. 111-P

### SPLIT-PHASE MOTORS

Specifications and construction features of both general- and special-purpose motors for a host of applications. Sleeve- or ball-bearing types; totally enclosed or open-protected; rigid or resilient mountings; thermal protectors. Ratings from 1/20 to 1/3 H.P.

### OIL-BURNER MOTORS

Performance curves, dimensional data and construction features on specially designed oil-burner motors, based on 58 years of research, design and precision manufacturing to meet the problems of oil burner applications. Totally enclosed, streamlined, quiet-running . . . built for continuous trouble-free service. 1/6 H.P.



No. 114-P



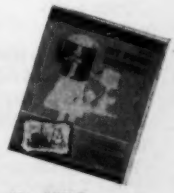
No. 112-P

### INTEGRAL MOTORS

Emerson-Electric Integral Motors up to 5 H.P. are fully described, with construction details, performance curves, and dimensional data. Included are repulsion-induction, repulsion-start induction run, polyphase, and D.C. motors for a wide variety of applications.

### JET PUMP MOTORS

This bulletin gives construction features, performance curves and dimensional data on motors developed especially for direct-drive jet pumps. The heart of a jet pump is the motor that powers it . . . an important reason for specifying motors that embody every dependable feature and design improvement achieved by a pioneer manufacturer of pump motors.



No. 115-P

**EMERSON ELECTRIC**

**MOTORS • FANS APPLIANCES**



# Your Product is OUR problem, too!

Properly engineered products made of Alcoa Aluminum can and should be better for their purpose than products made from other materials. When they are, your products get a big sales lift — and so does Alcoa Aluminum.

That's why it helps both you and us when you take advantage of the technical material that your Alcoa Distributor has available. Fact-packed, fully illustrated booklets that tell and show good shop practices, from alloy choice to finishes. Your Alcoa Distributor will be glad to supply them. Eleven how-to-do-it motion pictures also available for rent or purchase. Ask your distributor, or write ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pennsylvania.

## ALCOA DISTRIBUTORS NATIONWIDE:

**Atlanta, Georgia**
- J. M. Tull Metal & Supply Co., Inc. Phone: WAlnut 3525

**Baltimore, Maryland**
- Whitehead Metal Products Co., Inc. Phone: LAfayette 2300

**Boston (Cambridge), Massachusetts**
- Whitehead Metal Products Co., Inc. Phone: TRowbridge 6-4680

**Buffalo, New York**
- Brace-Mueller-Huntley, Inc. Phone: RIverside 2620
- Whitehead Metal Products Co., Inc. Phone: CLeveland 1475

**Charlotte, North Carolina**
- Edgcomb Steel Company Phone: 5-3361

**Chicago, Illinois**
- Central Steel & Wire Company Phone: REpublic 7-3000
- Steel Sales Corporation Phone: BIshop 7-7700

**Cincinnati, Ohio**
- Williams & Company, Inc. Phone: CApitol 3000

**Cleveland, Ohio**
- Williams & Company, Inc. Phone: UTah 1-5000

**Columbus, Ohio**
- Williams & Company, Inc. Phone: KLondike 1623

**Dallas, Texas**
- Metal Goods Corporation Phone: DIxon 4-3925

**Detroit, Michigan**
- Steel Sales Corporation Phone: TYler 6-3000

**Houston, Texas**
- Metal Goods Corporation Phone: CEntral 8881

**Kansas City, North, Missouri**
- Metal Goods Corporation Phone: NOrclay 3516

**Los Angeles, California**
- Ducommun Metals and Supply Co. Phone: KImball 0161
- Pacific Metals Company, Ltd. Phone: PRospect 0171

**Newark, New Jersey**
- Whitehead Metal Products Co., Inc. Phone: BIgelow 8-8500

**New Orleans, Louisiana**
- Metal Goods Corporation Phone: CAnal 7373

**New York, New York**
- Whitehead Metal Products Co., Inc. Phone: WAtkins 4-1500

**Philadelphia, Pennsylvania**
- Edgcomb Steel Company Phone: GArfield 3-6300
- Whitehead Metal Products Co., Inc. Phone: BAldwin 9-2323

**Pittsburgh, Pennsylvania**
- Williams & Company, Inc. Phone: CEdar 1-8600

**Portland, Oregon**
- Pacific Metal Company Phone: BRoadway 0695

**Rochester, New York**
- Brace-Mueller-Huntley, Inc. Phone: GLenwood 0962

**San Francisco, California**
- Pacific Metals Company, Ltd. Phones: MIssion 7-1184 ENterprise 1-0806

**Seattle, Washington**
- Pacific Metal Company Phone: MAin 6925

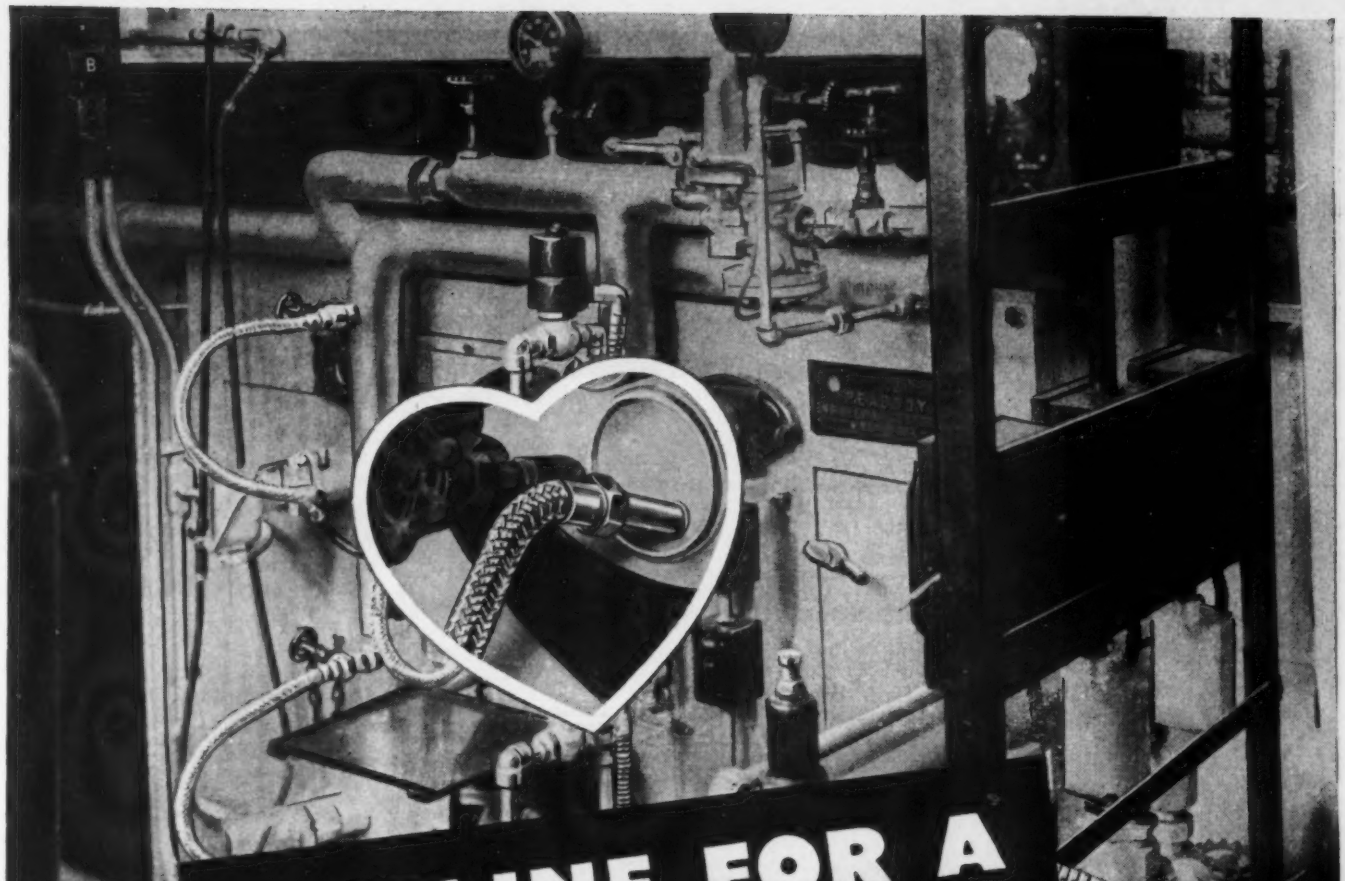
**St. Louis, Missouri**
- Metal Goods Corporation Phone: GOodfellow 1234

**Syracuse, New York**
- Brace-Mueller-Huntley, Inc. Phones: SYracuse 73-3341 9-6621
- Whitehead Metal Products Co., Inc. Phone: SYracuse 3-0158

**Toledo, Ohio**
- Williams & Company, Inc. Phone: ADams 8101

**Tulsa, Oklahoma**
- Metal Goods Corporation Phone: 4-1175

ALCOA FIRST IN ALUMINUM



# LIFELINE FOR A HEATING PLANT

## PENFLEX FLEXIBLE METAL HOSE CUTS CLEANING TIME, ALLOWS QUICK SWITCH OF NOZZLES . . . IS LEAKPROOF FOR LIFE

When the switch was made from coal to oil, in the world's largest manufacturing plant for toys, Penflex was specified in the dual burner oil fired furnace. Fuel lines were needed that would not leak or clog . . . were easily adjusted and maintained.

Here's where Penflexweld, corrugated from one piece of steel or bronze, proved its worth. It is absolutely safe from leakage, flame and high temperatures . . . yet assures flexibility with no danger of metal fatigue. Tight as a pipe but flexible. Penflexweld is invaluable where it is necessary to convey liquids, gases and volatiles of a highly penetrative nature.

Wherever you require flexible tubing in your plant, Penflex has the product and "Flexineering" (the science of applying flexible tubing to fit the particular need) has the answer to save you time, and money in maintenance. Call on Penflex for a complete line of flexible metal hose, tubing and couplings from ⅛" I.D. to 30" I.D. Write for your free copy of "Flexineering."

**PENNSYLVANIA FLEXIBLE METALLIC TUBING CO.**
**7218 Powers Lane** **Philadelphia 42, Penna.**

Branch Sales Offices

BOSTON • NEW YORK • CLEVELAND • CHICAGO • HOUSTON • LOS ANGELES

*penflex*... HEART OF INDUSTRY'S LIFE LINES

Copyright 1949—Penna. Flexible Metallic Tubing Co.



*Want Additional Product Information? See Page 19.*




JLMcoF-123

# They MUST be uniform!!!



Railroad tracks and CASTOMATIC Solder bars are alike in the fact that they are always *uniform*. The tracks are the same distance apart; the CASTOMATIC Solder bars are identical in composition, weight and appearance.

And uniform solder bars mean quicker, easier, smoother soldering for YOU!

CASTOMATIC is the most notable development in the bar solder field since tin met lead. Exclusive with Federated, it is a process by which patented machines automatically cast bars with a precision that hand casting cannot equal. From melting pot to mold, the molten metal is carried under pressure in a closed system, thereby completely excluding harmful oxides.

There are no voids in CASTOMATIC bars . . . no segregation to slow down the job. Every portion of every bar melts at the same temperature, because the electronically controlled machines guarantee identical composition throughout. CASTOMATIC surfaces shine all over and tell of uniform quality beneath.

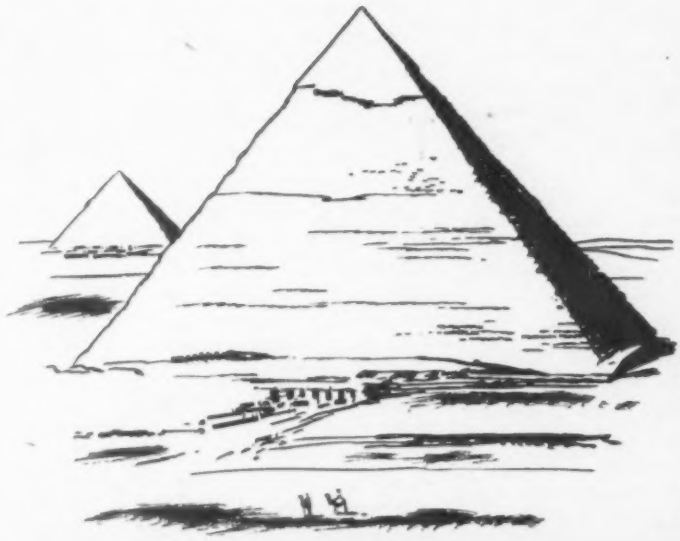
Available in standard 1½ lb. bars; all commercial compositions. Ask for CASTOMATIC Solders!

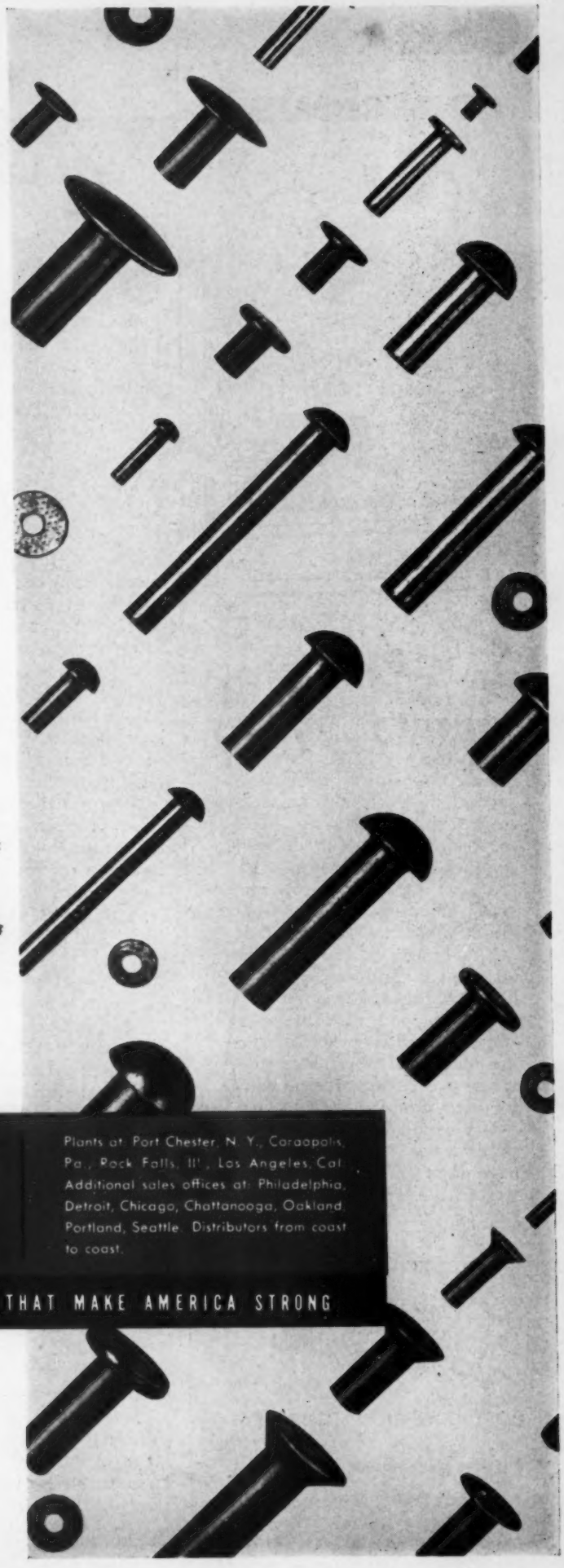
Federated first in the non ferrous field AMD

**Federated METALS DIVISION**

**AMERICAN SMELTING AND REFINING COMPANY, 120 BROADWAY, NEW YORK 5, N.Y.**

**RIVETS THAT CAN BE UNIFORMLY DRIVEN** will maintain permanence of the assembly... help you get *True Fastener Economy*. The extra margin of long-lasting holding power furnished by RB&W **SMALL RIVETS** is the product of more than a century of continuous research and progressive development in rivet manufacturing . . . backed by the skill of four generations of RB&W men and women.





**R B & W**

THE COMPLETE QUALITY LINE

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Cal. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland, Portland, Seattle. Distributors from coast to coast.

104 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

**RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY**

# Cost conscious?



*try*

## Accurate Springs

Cost conscious purchasing agents, engineers and production men examining their sources of supply will do well to consider Accurate as a source for springs, wire forms and small stampings. We at Accurate have an enviable record of saving money for our customers. Our production "know-how" is backed by a modern plant equipped with the very latest cost-cutting springmaking machines to produce uniformly accurate components for your product.

We would welcome the opportunity to show you what we have done for others and what we can do for you. Give us a ring or write us today.

Accurate Springs

COST CONSCIOUS QUALITY
*Since 1930*
ACCURATE SPRING MFG. CO.
3825 W. Lake St. • Chicago 24, Ill.

*Springs, Wire Forms, Stampings*


# F.O.B. *filosofy of buying*

ONE of the strictly seasonal business indicators has made its annual appearance on the financial pages—store purchases and stocking for the Christmas trade. The outlook, according to this barometer, is highly optimistic.

• •

OUR old friend Reciprocity is coming back, and with a boom. In fact, one letter of solicitation received at this office borrows its theme from the atomic age vocabulary (with variations) in proposing that we "split the old axiom" that *It's poor business to suggest reciprocity.* This communication, obviously a form letter sent to the company's entire prospect list, on which we appear in a humble way by virtue of one subscription, has a disarming approach: "May we suggest that you enlighten us further on other products we might be able to buy from you? In turn, may we have the opportunity to give you a more complete picture of the 9001 . . . products we manufacture that you could possibly use in your operation? . . . In closing, let us put it this way—if we were not a customer of yours, we would not hesitate to try making you a customer of ours. Why should the situation be any different just because you happen to supply us with some of the products which you make. There! Don't you think that old axiom is split wide open?"

• •

ADVERTISING isn't all commercial, and its contributions to a better America should be recognized. The 7th Annual Report of The Advertising Council is at hand. The Council is a voluntary, nonprofit organization supported and operated by advertisers, advertising agencies, and advertising media groups (including newspaper and magazine publishers, broadcasters, and outdoor advertising companies) for the purpose of utilizing the force of advertising in the solution of national problems. The report lists 15 major campaigns for the year, representing contributions of time and space to the extent of more than a hundred million dollars. These projects included the promotion of such causes as Better Schools, C.A.R.E. Packages, Community Chests, Tuberculosis Prevention, Forest Fire Prevention, Red Cross, Steel Scrap Salvage, Stop Accidents, Student Nurse Recruitment, U. S. Savings Bonds, and Prestige of the Armed Forces. Measurable results in every case highly gratifying and have earned warm commendation from government and other officials. Let's give the hucksters a hand.

• •

THE name of a purchasing executive popped into the headlines in mid-September as exemplar of a problem in public service that ought to be resolved on a common sense businesslike basis. The man was Carl Ilgenfritz, who heads the purchasing activities of U. S. Steel, and who was invited to serve as chairman of the Munitions Board, where knowledge and experience in business and purchasing are urgently needed. The Senate rejected his nomination. The question was whether a man who is eminently qualified to serve in this capacity would be permitted to do so on a leave of absence from his company, with pay, or whether he should be required to sever all commercial connections and income during the period of his governmental service, assuming the added expense of Washington residence, at the relatively low governmental remuneration. Frankly, there are few first-rank specialist executives who can afford to make the latter choice, in justice to themselves and to their families. If the policy is to be strictly enforced, the government is greatly restricting itself in its choice of key personnel. A further touch of irony in the situation is the fact that the very qualifications of ability and prestige to carry out such an assignment consist largely

of the selfsame commercial position that is being challenged.

Perhaps our opinion is colored by our complete confidence in Carl Ilgenfritz himself, based on a personal acquaintanceship of many years as well as on his outstanding record in industrial purchasing. It does seem, however, that there are two important distinctions that should be borne in mind when considering a nomination of this nature in relation to the general rules of government appointments. The first of these is the distinction between the type of position that can be classified and rated, and which many individuals could fill adequately or even competently, and the type of special assignment that necessarily seeks the one person best qualified to do the job. In the one case we are dealing with the question of what the job is worth, and in the second case it is a question of what the man is worth. The other distinction is between the man who seeks or is willing to make public service a career, and the man who is willing to make his special contribution to the public service at the sacrifice of his own time, strength, and convenience. The company that is willing to make the latter course possible should be commended rather than censured.

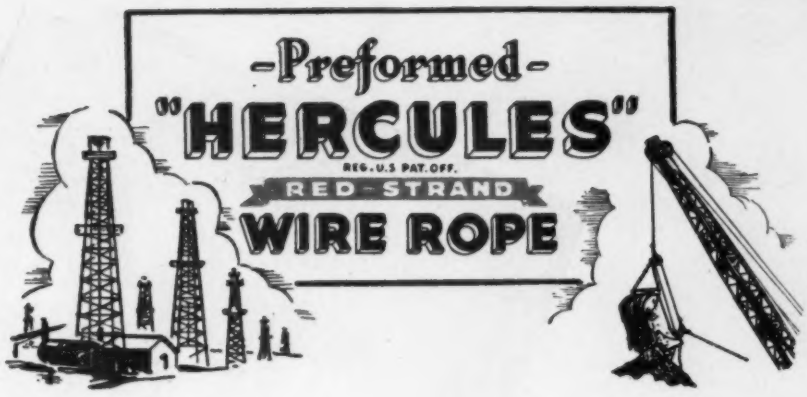
The Munitions Board assignment is but one of several in the purchasing field alone, that are calling for the best brains and ability that it is possible to recruit for governmental organization and administration. It is to be hoped that the rule of reason will be invoked as the Executive Departments and the Congress consider these vital appointments.

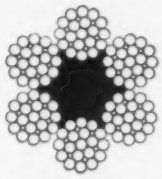
• •

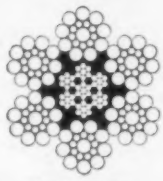
ONE of the more pleasurable aspects of purchasing is pictured in a recent issue of the *Hotel Gazette*, which shows a group of New York hotel purchasing agents gathered "to participate in the tasting" of a new concoction to be known as the Co-Q-Tail cocktail. Judging by the photograph, the tasting-testing session was highly successful. The recipe (with commercials), in case you are interested, is:

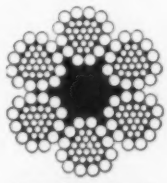
3—1½ oz. Don Q Rum
2—1½ oz. Homogenized Milk
1—1½ oz. Lopez Cream of Coconut

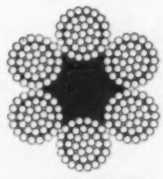
Mix with dash of cinnamon in a Waring Mixer. Serve in champagne glasses. Will make three 4 oz. drinks.

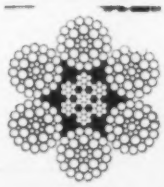





6 x 19 Filler Wire Fiber Core


6 x 19 Seale Wire Rope Core


Style G-Flattened Strand Fiber Core


6 x 37 Filler Wire Fiber Core


6 x 41 Wire Rope Core

## Easy to Handle . . . Safe and Economical to Use

**For over 60 years "HERCULES" (Red-Strand) Wire Rope has been proving its worth by the accurate yardstick of actual performance. Now in the Preformed type, a plus value has been added. As internal stresses are largely eliminated, the rope is less apt to kink . . . it is easier to handle . . . it spools better . . . it lasts longer.**

**Another and ever important factor in determining wire rope life is the use of the right rope for the work to be done. To meet this situation, Preformed "HERCULES" (Red-Strand) Wire Rope is made in a wide range of both Round Strand and Flattened Strand constructions. Our Engineering Department will be glad to help you make the right selection.**

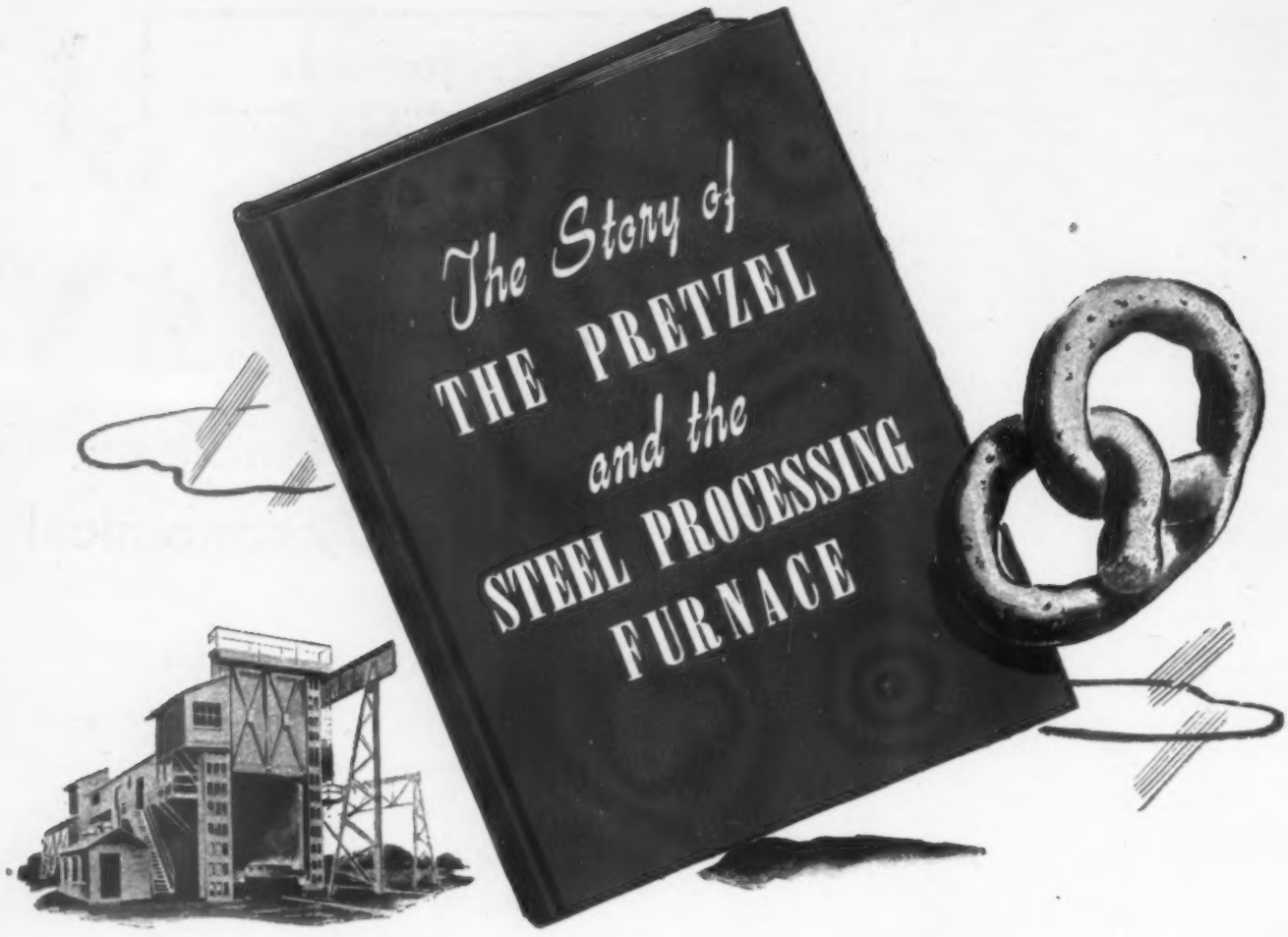
*We Invite Your Inquiries*

MADE ONLY BY
**A. LESCHEN & SONS ROPE CO.**
WIRE ROPE MAKERS — ESTABLISHED 1857
5909 KENNERLY AVE. — ST. LOUIS 12, MO.

New York 6 • Chicago 7
Los Angeles 21 • Portland 9
Houston 3 • Denver 2 • Seattle 9
Birmingham 6 • San Francisco 7



*Want Additional Product Information? See Page 19.*




You wouldn't think a pretzel had any relation to a steel processing furnace. But it does, and here's why:

A baking company recently lined a pretzel oven with B&W K-20 Insulating Firebrick. Immediate results—*50% reduction in baking time (6 minutes to 3 minutes) and over 57% reduction in heating-up time from a cold start (7 hours to 3 hours).*

Of course your business is different, but whether it's producing pretzels or processing steels in annealing, spheroidizing, forging, billet-heating, stress relieving or any other heating furnaces—it's B&W Insulating Firebrick that helps to do the trick better and more economically.

Because they are the lightest in their class, B&W I.F.B. have the lowest heat conductivity and lowest heat storage capacity. Furnaces lined with B&W I.F.B. come to operating temperature quickly, require less fuel to operate. This means cycle time is substantially cut: overall operating costs go down —production goes up.

Throughout the country, B&W Refractory Engineers are guiding progressive industries to reduced costs through increased furnace operating efficiency. Why not take advantage of their practical training and years of experience? A call or a post card will bring your local B&W Representative.

B&W

**B&W REFRACTORIES PRODUCTS**

B&W 80 FIREBRICK • B&W JUNIOR FIREBRICK
B&W 80 GLASS TANK BLOCKS • B&W INSULATING FIREBRICK
B&W REFRACTORY CASTABLES, PLASTICS AND MORTARS

•

OTHER B&W PRODUCTS

Stationary & Marine Boilers and Component Equipment
Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers
Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

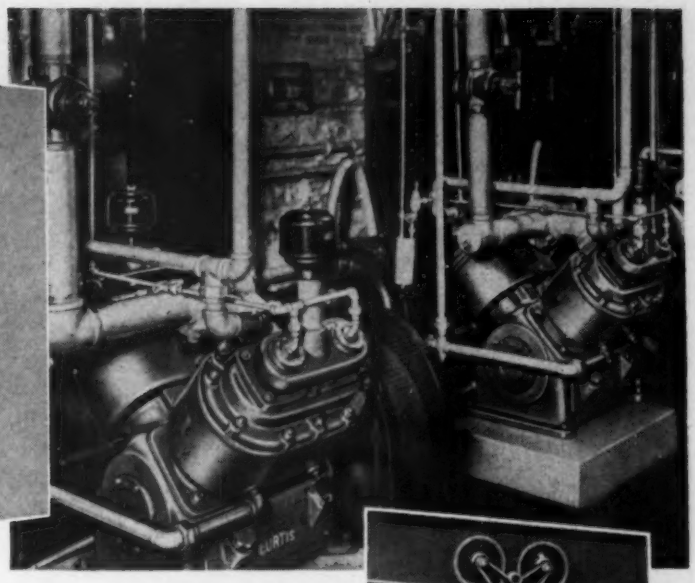
**BABCOCK & WILCOX**

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: AUGUSTA, GA.



*Want Additional Product Information? See Page 19.*

# Reduce Production Costs with CURTIS AIR COMPRESSORS, AIR HOISTS AND AIR CYLINDERS



Plant after plant is turning to Curtis Air Hoists and Cylinders for pushing, pulling, lowering or lifting operations . . . and to multiple installations of Curtis Air Compressors, which eliminate long air lines, the possibility of air leaks, and losses resulting from breakdowns of central air compressor installations.

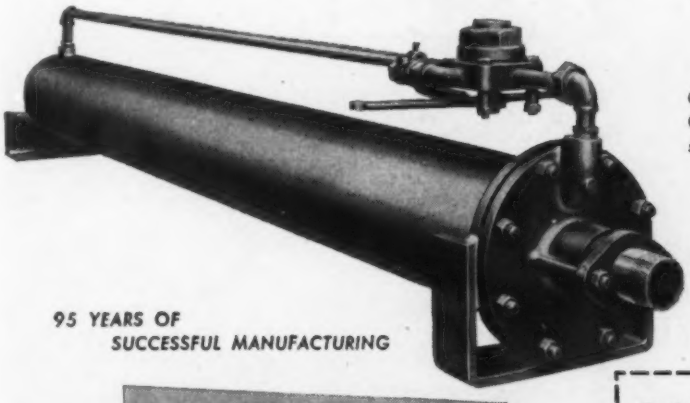
## *Here's why it will pay you to consider* CURTIS *equipment*

### AIR HOISTS AND AIR CYLINDERS

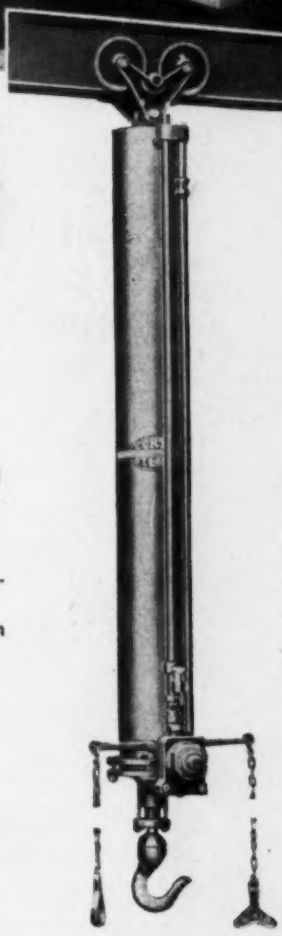
- Cannot be overloaded.
- Hoisting or lowering speed is controlled by operator.
- Ground-steel cylinder.
- Disc type valves.
- Valve automatically returns to vertical position when released.
- Can be operated by unskilled labor.

### AIR COMPRESSORS

- Timken-Bearing equipped—permits external adjustment.
- Self oiling—positive lubrication.
- Precision construction throughout.
- Complete valve assembly removed or replaced in a few moments.
- Cylinder, crankcase, also heads made from gas-tight iron.
- Fully enclosed.



*Curtis bracketed-type Air-Hoist Cylinder can be placed in any position from horizontal to vertical.*



*Curtis Pendant Air Hoist can be used for practically any lifting problem where the head room is not limited.*

*95 YEARS OF SUCCESSFUL MANUFACTURING*

CURTIS

**PNEUMATIC MACHINERY DIVISION**
*of Curtis Manufacturing Company*
1908 Kienlen Avenue, Saint Louis 20, Missouri

**Curtis Pneumatic Machinery Division of Curtis Mfg. Co.** 149-4
1908 Kienlen Avenue, St. Louis 20, Missouri

*I am interested only in items checked below:*

- ☐ Air Hoists
- ☐ Air Cylinders
- ☐ Air Compressors

NAME_____
FIRM_____
STREET_____
CITY_____ ZONE____ STATE_____

# EATON

## Permanent Mold Gray Iron Castings



## for AUTOMOTIVE APPLICATIONS

- ★ Dense non-porous structure
- ★ No leakage under pressure
- ★ Freedom from growth
- ★ Uniform structure throughout the casting
- ★ Free machinability

Eaton Foundry Division engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product. Send for the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings."

EATON MANUFACTURING COMPANY

CLEVELAND, OHIO

*Foundry Division*

9771 French Road • Detroit 13, Michigan

PRODUCTS: SODIUM COOLED, POPPET, AND FREE VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • ROTOR PUMPS • MOTOR TRUCK AXLES • PERMANENT MOLD GRAY IRON CASTINGS • HEATER-DEFROSTER UNITS • SNAP RINGS • SPRINGTITES SPRING WASHERS • COLD DRAWN STEEL • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, DYNAMOMETERS

# Purchasing Previews



## A Washington Report . . . . . for Purchasing Agents

November 1, 1949.

EFFECTS OF RUSSIAN A-BOMB ON U. S. ECONOMY . . .

Immediate reaction to public disclosure of the Russian attainment of atomic power has been a decision to accelerate the program of military and economic preparedness.

This means increased emphasis on the military production of aeronautical equipment, electronics equipment, and components going into airplanes and guided missiles. On the economic side, stockpiling of strategic materials will be stepped up.

In addition, the program of military and economic aid to the Western European countries will be pushed through. Ultimate objective will be to win a combined armaments and economic race that will serve to bring more countries into the political and economic orbit of the United States and the Western European countries.

These combined programs will create a world demand for materials which is expected to ward off any possibility of the development of surpluses. There will also be some balancing off in price structures to bring commodities into a rational trading position. Level of prices will be below the 1948 peaks, but no sharp break in prices is likely as long as trade between the East and the West is choked off by military alarm.

INVENTORIES LIKELY TO REMAIN AT CURRENT LEVELS . . .

While there has been considerable talk about a reversal in the purchasing picture from liquidation to a building up of inventories, the trend so far does not bear this out. Liquidation has certainly stopped, but manufacturers, distributors and retailers seem content to work along on a lower level, even though it is considerably less than the prewar ratio of inventory to sales.

Another important factor in the economic picture is the improvement in industrial employment, which is the result of the large volume of goods consumption. Coupled with the military program, the quantity of goods required to meet present consumption levels calls for almost full employment.

The fact that the level of employment is less than 1948, and that there are seasonal peaks and valleys in many industries, does not so much reflect a weakness in the economy as it indicates the complexity of an industrial machine geared to an unprecedented volume of production.

In view of the general outlook for stable prices, it is unlikely that there will be a movement toward building up inventories above their present level, unless current levels tend to reduce the sales potential.

"FUNNELING" OF U. S. CONTRACTS NOT WORKING OUT . . .

Little has been done to funnel Government contracts into areas of distressed employment, simply because under the legal requirements of awarding contracts to the lowest bidders, there is practically no leeway for favoring a

manufacturer who needs the business to keep his labor force employed.

There have been instances where manufacturers have appealed to Government agencies for help in obtaining Government supply contracts, and where by placing the suppliers on the bidders list, contracts resulted by virtue of low bids. However, the White House program of using Government buying as a spur to employment in distressed areas has not advanced beyond the talk stage.

The new procurement regulations controlling Government purchasing allow some leeway in experimental contracts, but here again the problem of fitting these contracts into areas of excessive unemployment will result in few such contract awards.

Only realistic program which has been proposed for helping manufacturers in distressed unemployment areas to get Government contracts calls for wide dissemination of information on what the Government requirements are, and how manufacturers can bid on contracts.

Likewise, there could be some effort to persuade prime contract holders to place subcontracts with subcontractors located in areas of great unemployment. This would have to be on an unofficial basis,and would likely result in great protest from other subcontractors competing for the business.

USE OF MORE NATURAL RUBBER AUTHORIZED . . .

Trade pattern in basic world commodities continues to be a complex mixture of Government controls and free trade. Important example is the recent action by the Department of Commerce permitting U. S. rubber manufacturing industry to increase its use of natural rubber by 50,000 long tons a year. The action was taken at the request of British spokesmen who argued their need for earning more dollars.

Action is permissive, and directly affects manufacturers of tires, tubes and camelback. Question of whether the U. S. manufacturers will use more natural rubber depends on several factors. Tire and tube producers cannot change their formulas to allow for a greater use of natural rubber unless they can be assured of a continued supply at a price differential more than a cent a pound below the price of synthetic rubber. They must further be assured of such a price differential on future deliveries of at least six months ahead.

It is generally assumed that rubber produced at the large, efficient rubber estates in Malay can meet the competitive price of synthetic. Most of these producing estates are owned by British capital, with some native interest. These estates have developed a new type of rubber-producing tree with a high yield. There is a large number of both large and small rubber estates producing with the old type tree, and these have been operating at a loss.

The general outlook is for the efficient estates to maintain their position in the world market—and for the other producers to be squeezed out in competition with synthetic. British area production of natural rubber is running at about 90% of capacity. Dutch area production in the war-troubled areas of the Dutch East Indies has been running at about 50% of capacity.

Russia has been buying natural rubber. Exactly how much, is not known, but it has run 6,000 tons during some months. This purchase is not an important factor in comparison with the 600,000 to 700,000 tons of natural rubber purchased annually by the U. S.

Two factors dictate U. S. Government control policy in relation to rubber—the first is the maintenance of synthetic rubber production as an important adjunct to national defense—and the second is the continued purchase of crude rubber to support the economies of the rubber-producing areas of the world. Without the latter, there would ensue economic collapse that would open the Far Eastern areas to certain Communist infiltration.

# For lowest-cost fuel handling

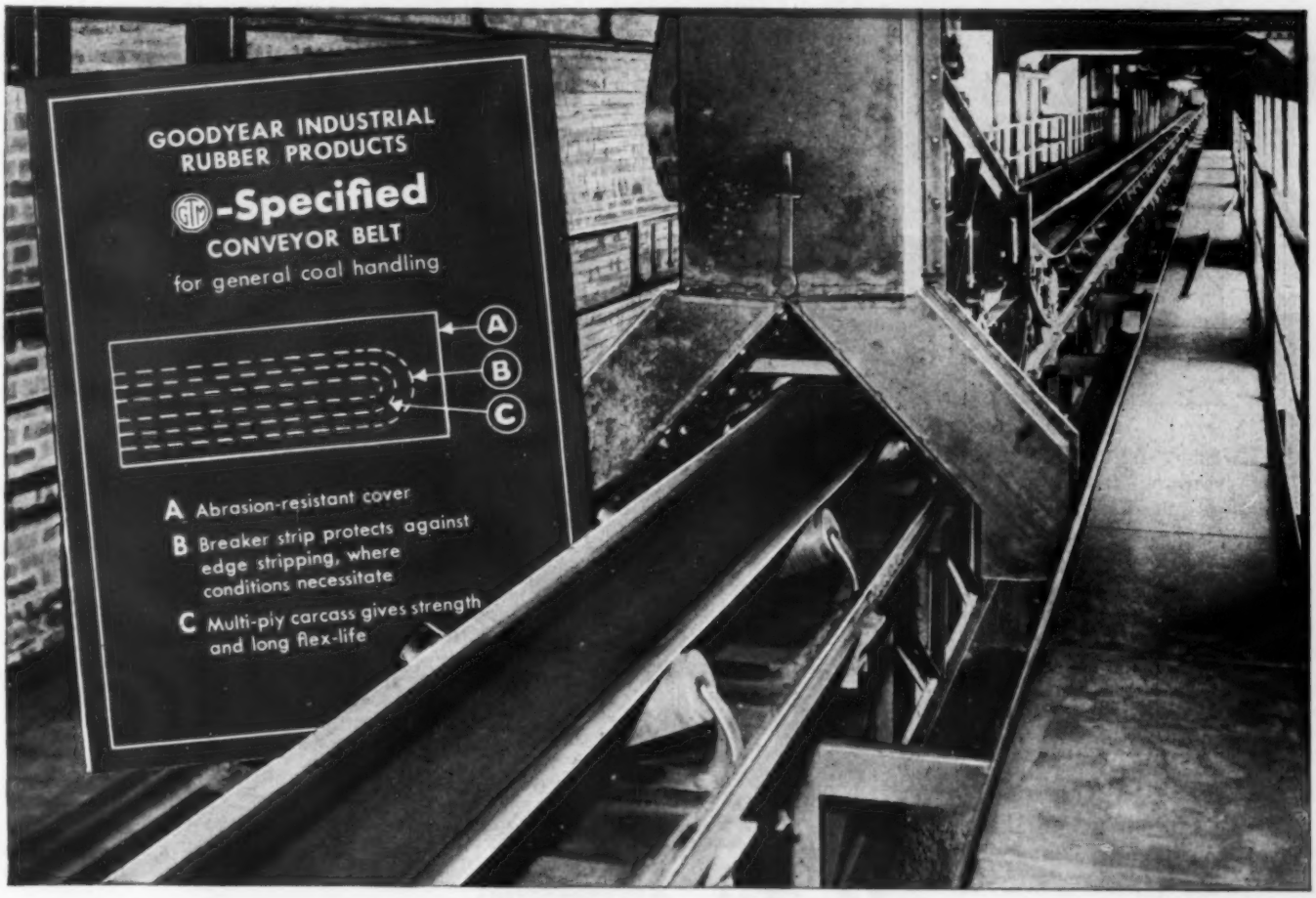
## Specify GOODYEAR Belts

*WHATEVER kind of coal you feed your boilers, you can handle it better — quicker — and at lower cost with Goodyear conveyor belts — from stock pile or unloading point to crusher to bunker.*

Here's why. When you order a belt from the G.T.M.– Goodyear Technical Man — he draws on the experience of the world's largest maker of conveyor belts to specify the exact equipment for your needs — the belt that will handle *more* coal for *longer* periods at *less* cost.

The number of revolutions per hour, the frequency and severity of abrasion and flexing, the magnitude of impact to be absorbed by the belts, the physical and chemical properties of the materials to be conveyed — all these influence the G.T.M. in the selection of the proper belt to meet your needs. That's why Goodyear belts now in service have carried as much as 45,000,000 tons of coal — why a G.T.M.-specified fuel conveyor means lower-cost fuel handling — lower belt cost — higher plant efficiency at the bunker end.

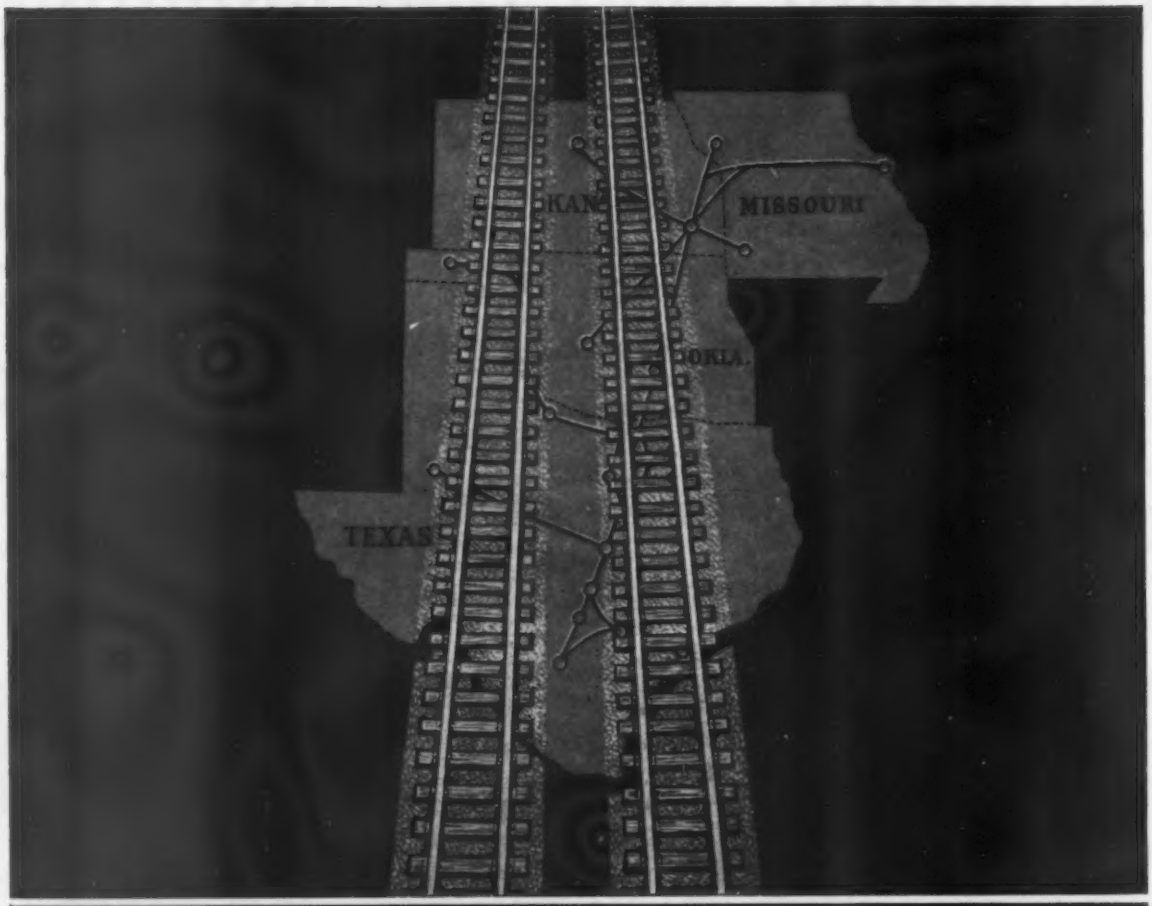
Why not get in touch with the G.T.M. today? Call your nearest distributor of Goodyear Industrial Rubber Products, or write Goodyear, Akron 16, Ohio.




**GOODYEAR**

**THE GREATEST NAME IN RUBBER**


*Want Additional Product Information? See Page 19.*




# You're on the right track when you ship *Katy*

Five crack Katy freights, operating on stepped-up daily schedules, provide dependable, on-time service between Texas and Oklahoma and the North, with extensive connecting service at terminals.

Smooth-hauling new road and yard Diesels, new cars and new rail . . . new automatic signals . . . the swift magic of radio, on-line and at terminals . . . service PLUS to you. Broader facilities, in rolling stock, yards and terminals, with one idea in mind: SAFER, BETTER FREIGHT SERVICE for You!



**End-to-End Radio Communication** means safer, speedier handling of freight, in all kinds of weather.



**Automatic Block Signals** precision-control the movements of Katy's freight fleet to suit your every shipping need.



**Modern Freight Terminals** combine human skill and mechanical facilities to process your freight with maximum safety and efficiency.

*the* **Katy**

M·K·T
KATY RAILROAD
MISSOURI-KANSAS-TEXAS

*NATURAL ROUTE SOUTHWEST*

318

# INDESTRUCTIBLE... HAND DETACHABLE



## THE CONTINENTAL DRIVE IS STRICTLY HAND DETACHABLE... REGARDLESS OF HOW SEVERE THE OPERATION HAS BEEN



With an ever-widening range of practical uses, the Continental Counterbore is a favorite standard cutting tool in all types and sizes of machine shops. Of rigid and simple construction, with time saving features, it has long been outstanding in American industry. There's a reason: Note in illustration above the Continental indestructible drive. It is composed of two driving lugs formed on the cutter shank, with two corresponding abutments on the inside of the holder. There is an aligning bearing above and below the driving lugs that brings the cutter and holder concentric, and prevents the cutter from being forced out of alignment. The cutter and holder are engaged and disengaged by revolving the cutter a quarter turn by hand. No tools or equipment are necessary . . . no drift pin required.

**Continental holders and cutters are available individually or in standard tool room sets. Send for Catalog No. D27161.**

49-29

CONTINENTAL TOOL WORKS
CTW
EX-CELL-O CORPORATION

**CONTINENTAL TOOL WORKS**
*DIVISION OF EX-CELL-O CORPORATION*
DETROIT 32, MICHIGAN

# NEW SYLVANIA LAST THREE TIMES AS

***Proved by Over Two Years of Field Performance!***




| * LIFE RATINGS | |
|---|---|
| Old Type Fluorescent Lamps | New Sylvania Fluorescent Lamps |
| 2500 Hours | 7500 Hours |

## These amazing triple-life lamps expand your lamp dollars

- You get 200% more lamp value by buying new Sylvania Triple-Life Fluorescent Lamps! You save as much as 66⅔% on lamp costs!
- They now last three times as long as previously rated. These amazing new lamps give higher light output plus added life at *no extra cost!*
- To give you this unsurpassed lamp value, Sylvania Research Laboratories and production engineers developed new processes and improved phosphors, producing lamps that are virtually free from discoloration up to 5000 hours!



*Out-live electric bulbs 7½ times!*

# SYLVANIA

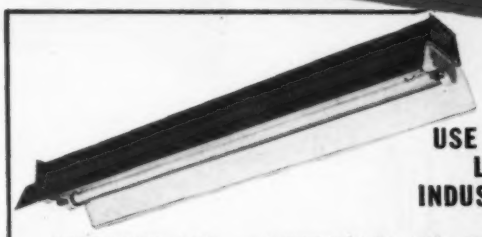
**FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES, SIGN TUBING; LIGHT BULBS;**

# FLUORESCENT LAMPS LONG AS OLD TYPES!*

## Proved by 11 Million Lamps!

- This means you can forget about a second and third lamp replacement job. Once you have Sylvania Triple-Life Lamps in your fixtures you not only save on lamp costs but you save 66⅔% on the cost of labor for lamp replacements!
- Field tests for over 2 years in plants, offices, factories, on over 11,000,000 of these lamps prove beyond doubt that your initial cost of buying the lamps is your only one for years to come!
- These long-life lamps minimize work interruptions due to lamp failures. They free your maintenance force for more important duties!

**Cut Cost of Labor For Replacement 66⅔%**



**USE THEM WITH THE LATEST SYLVANIA INDUSTRIAL FIXTURES**

HFFS-240 (4′) and HFFS-440 (8′) Fixtures give long lines of unbroken light. With new Triple-Life lamps these latest design fluorescent fixtures will give you the finest lighting you can buy. No joining bands are needed for continuous row mounting. Both are provided with turret lampholders to assure more positive seating of lamps. For better plant lighting find out more about these new fixtures and lamps.

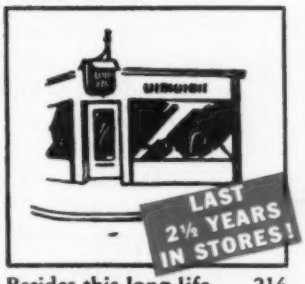


REPLACEMENT OR A REFUND OF MONEY — Guaranteed by Good Housekeeping — IF NOT AS ADVERTISED THEREIN

In Canada, Sylvania Fluorescent Lamps are manufactured by Sylvania Electric (Canada) Ltd. Sales Office: University Tower Bldg., Montreal 2, P.Q., Canada.




Under normal operating conditions you can depend on these Sylvania Triple-Life lamps lasting at least three years! More light! Greater accuracy!




Besides this long life . . . 2½ years under normal store conditions . . . you can be sure merchandise will be displayed under the most favorable light!




Minimize classroom disturbances. Under normal classroom conditions Sylvania Triple-Life fluorescent lamps will last for at least six long years!

**MAIL COUPON TODAY!**

Sylvania Electric Products Inc.
Advertising Dept. L-7511
500 Fifth Ave., New York 18, N. Y.

*Gentlemen:* Send full details about Triple-Life lamps and HFFS-240 and 440 fixtures.

Name_____

Address_____

City_____ Zone_____

State_____

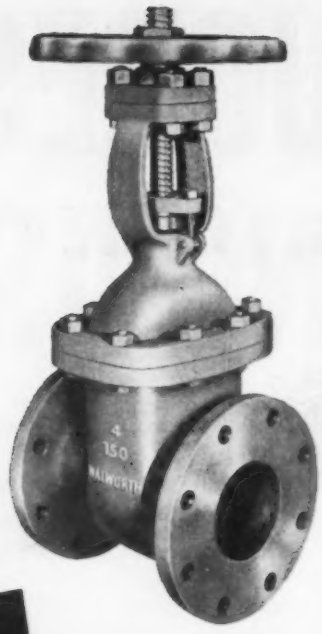
My lamp distributor is:

_____

# ELECTRIC

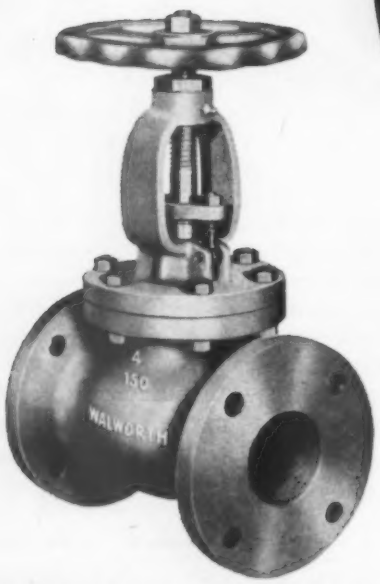
PHOTOLAMPS; RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES

# Newly Designed Walworth Valves to combat corrosion

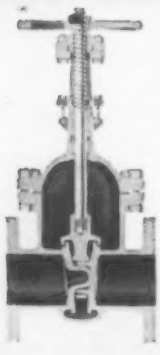


Walworth 150-pound Stainless Steel Gate Valve . . . available in sizes ½ to 3-inch, screwed; ½ to 12-inch, flanged.

Made of Stainless Steel
Monel · Nickel
Acid-resisting Bronze
Ni-resist



Walworth 150-pound Stainless Steel Globe Valve . . . available in sizes ½ to 3-inch, screwed; ½ to 6-inch, flanged.



Sectional view of Walworth 300-pound Stainless Steel Gate Valve . . . available in sizes 2 to 6-inch, flanged.

***— ENGINEERED AND TESTED FOR TOUGH . . . HARD SERVICE***

Walworth offers a comprehensive line of valves made of several cast stainless steels and special alloys for piping services where corrosion is a factor. These valves are available in Gate, Globe, Angle, Check, and Lubricated Plug types.

Gate, Globe and Angle Valves have outside screw and yoke construction, thus keeping the stem threads out of contact with the corrosive material in the line. They also have a two-piece bolted gland with ball-type gland follower to prevent binding the stem when packing bolts are tightened. Gland eye-bolts can be conveniently swung out of the way without danger of loss when the gland is lifted for repacking.

Gate Valves have taper seats with a unit consisting of two flat faced discs supported by a carrier on the end of the stem. The discs are of a proven ball-and-socket type. They are free to rotate and adjust themselves to the body seat angles, assuring tight seating with no possibility of sticking in any position.

For further information about Walworth's full line of corrosion-resistant valves, see your Walworth distributor.

# WALWORTH

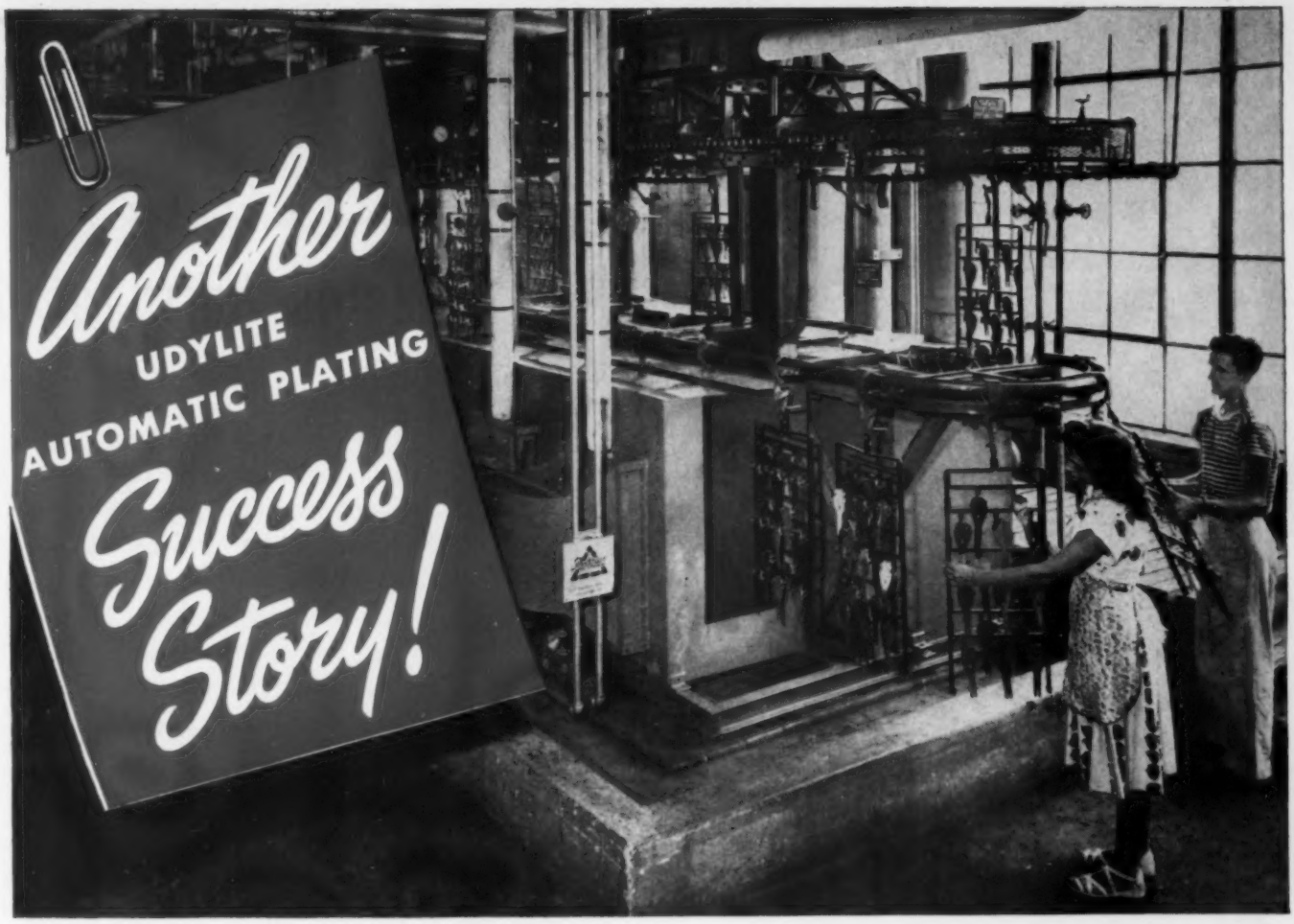
## valves and fittings

**60 EAST 42nd STREET, NEW YORK 17, N. Y.**

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



*Want Additional Product Information? See Page 19.*




**Production Stepped Up 25%—Now 1500 Parts Per Hour!**

**240 Man-Hours Saved Per Week!**

**Quality Improved—Rejects Reduced to ½ of 1%!**

*for*

**D. P. HARRIS**
**HDW. & MFG. CO., Inc.**
**Makers of the Famous**

**Rollfast**
**ROLLER SKATES**

● You can get results like these in YOUR plant, just as the Rollfast people did, by a simple and quick conversion to Udylite automatic machines.

You'll be miles ahead by choosing *Udylite*, because of important "hidden" values like these that don't show up in the initial estimate:

No long tie-ups in the plating room during installation—Udylite machines, shipped ready to run, can usually be installed over a week-end, and require but a few machinery movers. These compact machines require less working space, solving the load-and-unload space problem. Racks are within easy reach. And Udylite machines have astonished users with their low maintenance costs.

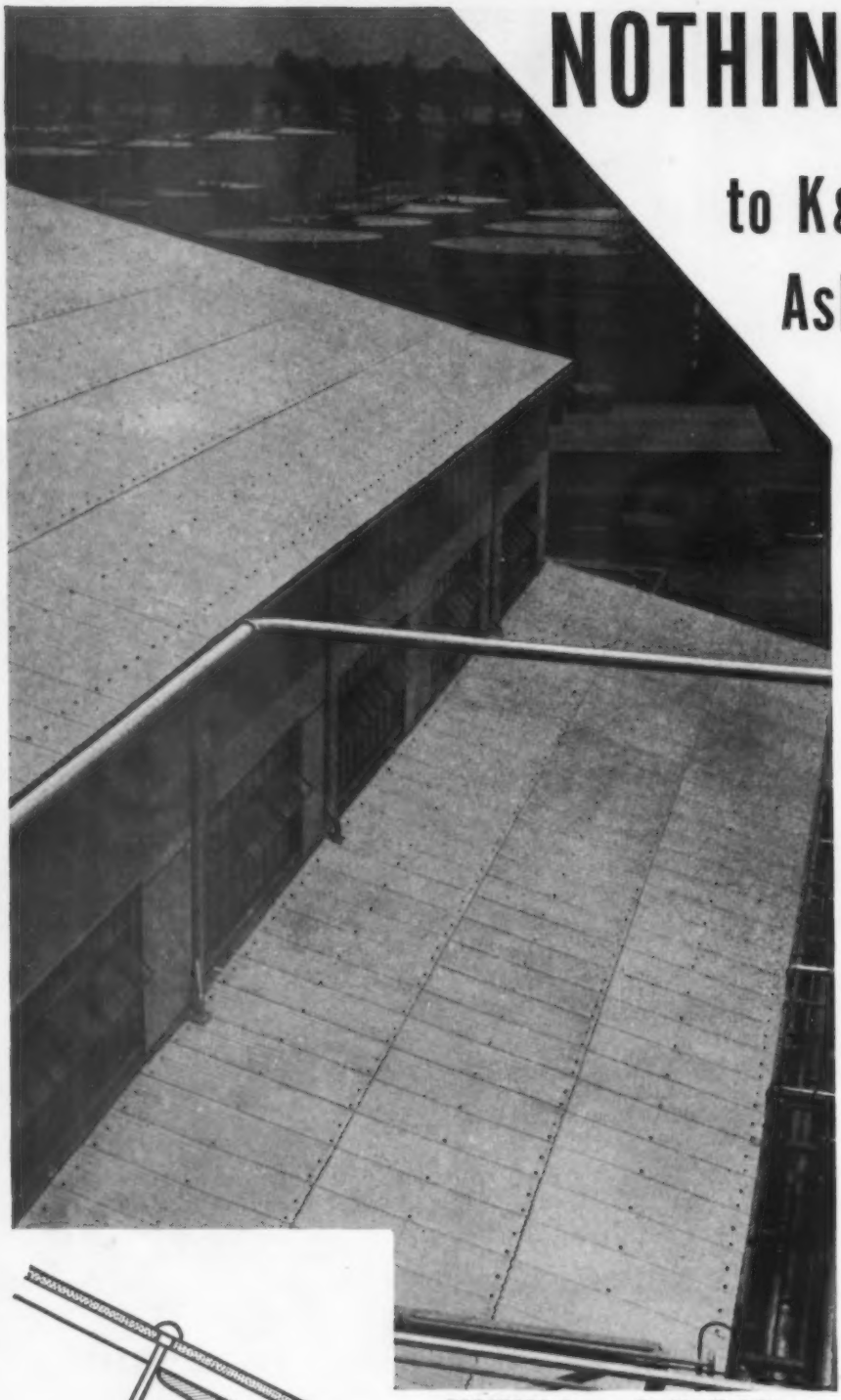
Write a "success story" like the one above in *your* plant—plan now to "go automatic" with Udylite equipment! We'll be glad to make recommendations, entirely without cost or obligation. Write *today*.

**THE Udylite CORPORATION**
**DETROIT 11, MICHIGAN**


*Want Additional Product Information? See Page 19.*

# NOTHING HAPPENS

## to K&M *"Century"* Asbestos Corrugated



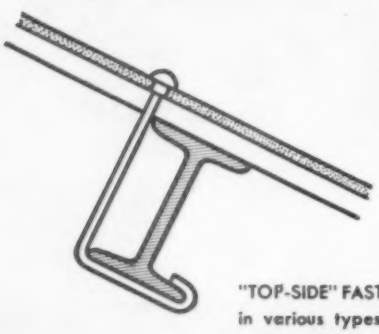
Here you see it used for both the roofing and siding on this Shell Oil Company building at Deer Park, Texas. Don't ever expect to see it hurt by the weather or other adverse atmospheric conditions. Count on it to go rustless and rotless. It won't suffer from rodents and termites, and is exceptionally resistant to fire.

Easily cut and fitted on the job, K&M "Century" Asbestos Corrugated produces tight, good-looking surfaces at minimum labor cost. For extra savings use "TOP-SIDE"* fasteners, as on this Shell building. They entirely eliminate scaffolding and are only available with K&M "Century" Asbestos Corrugated.

Your finished job will benefit by the inherent structural strength of this material which actually gains strength with age. As for upkeep, you needn't figure on even one bit of paint!

*® H. & B. Enterprise Corp.

*ERECTORS: Lummus Co., New York City.*



"TOP-SIDE" FASTENERS are made in various types, to fit all steel members on both roofing and siding. Illustration of typical "J" type for roofing.

*Nature made Asbestos...*
*Keasbey & Mattison has made it serve mankind since 1873*

K&M best in asbestos ®

**KEASBEY & MATTISON**
**COMPANY • AMBLER • PENNSYLVANIA**



*Want Additional Product Information? See Page 19.*




# NEW BWH COVER DEFIES "RUBBER EATERS"

## RESISTS OIL, GREASE, SUN AND ABRASION DAMAGE

Oil, grease, strong sunlight and abrasion are factors that can't be controlled in many industrial operations. Yet they are all "rubber eaters" that tend to break down covers on steam hose and to shorten its service.

BWH technologists sweated over the problem for many laboratory hours before they developed this new, die-hard, synthetic rubber cover for Concord #10 Steam Hose. This improved cover adds so much to steam hose life, nobody with an eye to operating expenses can afford to overlook it. Yet it costs no more than ordinary hose!

Here's what makes Concord #10 a good choice for hard jobs:

1. It has the same dependably strong heat- and oil-resistant tube that won fame for extra service in BWH Bull Dog Steam Hose.

2. It is fortified with braids of high-tensile steel wire which are heat and pressure resistant. Gives strength with extreme flexibility.

3. Asbestos braid assures perfect cover adhesion, includes new type static-conducting wire.

4. NEW cover is unharmed over longer periods by oil, grease and sunlight—resists abrasion and highest steam temperatures.

When you need EXTRA safe hose that prevents "burst" explosions, withstands working pressure to 200 lbs. and gives you more for your money, investigate Concord #10 with new abuse-resistant cover!

**HAVE YOU A JOB WHERE STAMINA COUNTS?**

Bring us your toughest problems... we're specialists in solving them. Consult your nearby BWH distributor or write us.

Another Quality Product of

**BOSTON WOVEN HOSE & RUBBER COMPANY**

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS., U.S.A. • P.O. BOX 1071, BOSTON 3, MASS.

# The SKF SUA unit pillow block

## *its* DESCRIPTION

To maintain a *tight fit* between bearing and shaft, you need an SKF SUA unit pillow block.

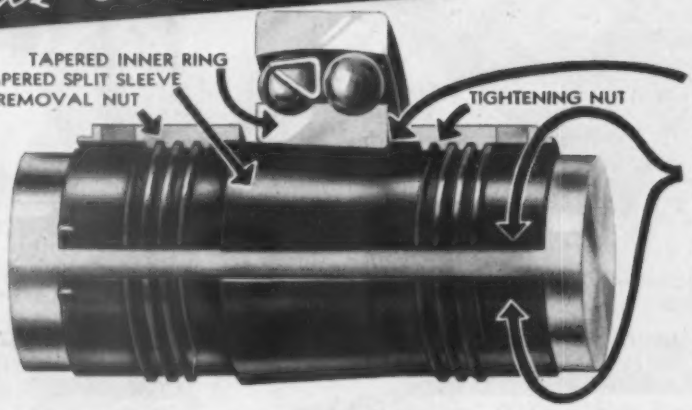
It's completely assembled, lubricated and ready for immediate use. Available in "free" and "held" types . . . and in shaft sizes from 1 7/16" to 2 7/16".

Its SKF-exclusive Align-O-Seals prevent lubricant leakage and dirt intrusion. No exposed bearing . . . no lock screws to raise troublesome burrs on the shaft . . . for the nut is locked to the sleeve. Even though the shaft vibrates, the concentric grip will not loosen.

Designated as type SUA with ball bearings—and type SUAR with spherical roller bearings.




## *its* CONSTRUCTION




TIGHT FIT results when the tightening nut pushes the tapered inner ring over the tapered split sleeve.

CONCENTRIC GRIP is firm and positive—as the split sleeve contracts and wraps around the shaft. Removal is accomplished by reversing the process—with tightening nut loosened, removal nut pushes inner ring off the sleeve.

## *its* APPLICATION

THE GREENVILLE STEEL AND FOUNDRY COMPANY of Greenville, S. C., specified SKF SUA units and built a "tight fit between bearings and shafts" into this DuPont Steamer for piece goods drying.

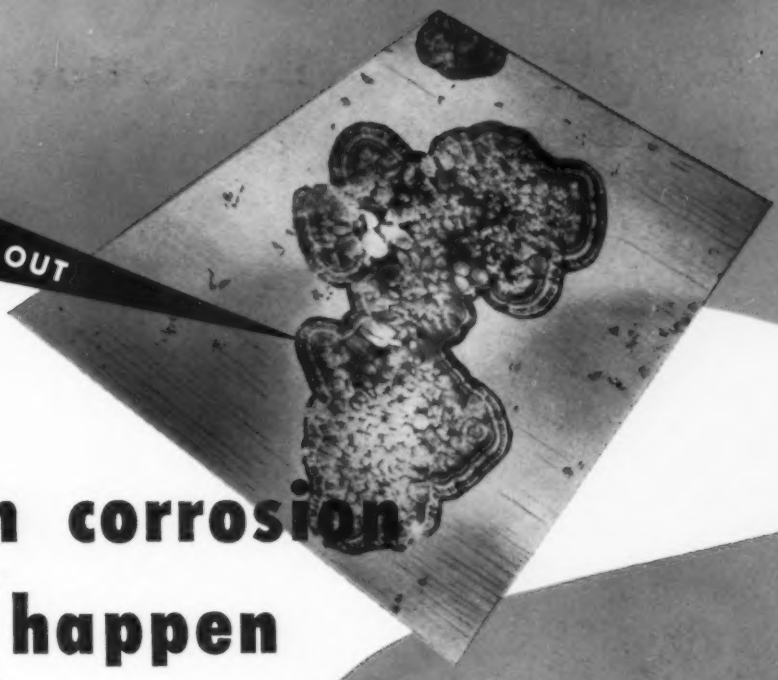
64 SKF SUA 107 unit pillow blocks help maintain long-range dependability on this unit which operates at 150 yards per minute maximum. Our engineers can show you why the SKF SUA unit pillow block belongs in your specifications. Write today.

6600



SKF
INDUSTRIES INC., PHILADELPHIA 32, PA.

WE WOULD LIKE TO POINT OUT



# underfilm corrosion just *Can't* happen with

# Weirzin

ELECTROLYTIC ZINC-COATED SHEETS AND STRIP



Paints, enamels, lacquers, varnishes and lithographic inks adhere to Weirzin securely and permanently, because underfilm corrosion cannot occur. The tight, malleable zinc coating, electrolytically applied, becomes an integral part of the sheet or strip . . . remains intact under all conditions of temperature and humidity . . . provides a perfect "tooth" for spray, dip or roller applications.

Extensive fabrication does not weaken this bond—after deep-drawing, forming and punching, the zinc coating remains unruptured and evenly deposited. There are appreciable savings in manufacturing, too, because Weirzin sheets and coils require no pickling or buffing, and very little cleaning . . . there is no need for a primer under paint.

## WEIRTON STEEL CO.

WEIRTON STEEL COMPANY

**WEIRTON, W. VA.,** *Sales Offices in Principal Cities*

*Division of* **NATIONAL STEEL CORPORATION,** *Executive Offices, Pittsburgh, Pennsylvania*

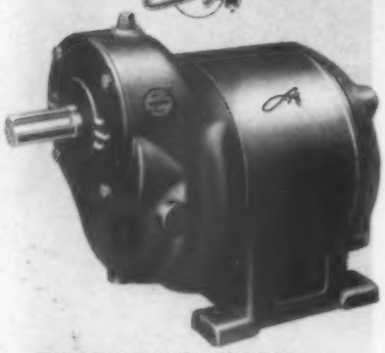
NATIONAL STEEL

# Two Leaders of Industry

**COMBINE SKILLS AND PRESENT**

## the FOOTE BROS.—LOUIS ALLIS GEARMOTOR

LOUIS ALLIS



**THE LOUIS ALLIS COMPANY**

Three generations of designing and building special motors for special applications by THE LOUIS ALLIS COMPANY—plus the creating, developing, and pioneering of many special types of motors for special operating conditions—give you one of—if not THE largest selection of sizes and types of standard and special motors in the entire industry today.

The specialized engineering and manufacturing experience and facilities of FOOTE BROS. GEAR AND MACHINE CORPORATION and THE LOUIS ALLIS COMPANY are now available to industry through the separate sales, service, and manufacturing organizations of both Companies.

The combination of these two quality products into one compact, efficient gearmotor reflects the earnest desire of both firms to better serve industry through their combined skills.

To be available in single, double, and triple reduction in ratings of 1 h.p. through 75 h.p. with open drip-proof, enclosed, splashproof, and explosion-proof motors.

FOOTE BROS.



**FOOTE BROS. GEAR AND MACHINE CORPORATION**

Back of Foote Bros. is nearly a century of engineering knowledge and manufacturing experience plus the latest in gear generating equipment, all of which assure the highest quality in gear design and production. Foote Bros. complete line includes helical and worm drives to meet practically any industrial requirement.



## On your very next gearmotor application Specify Foote Bros.-Louis Allis Gearmotors

**THE LOUIS ALLIS COMPANY**
427 East Stewart Street
MILWAUKEE 7, WISCONSIN

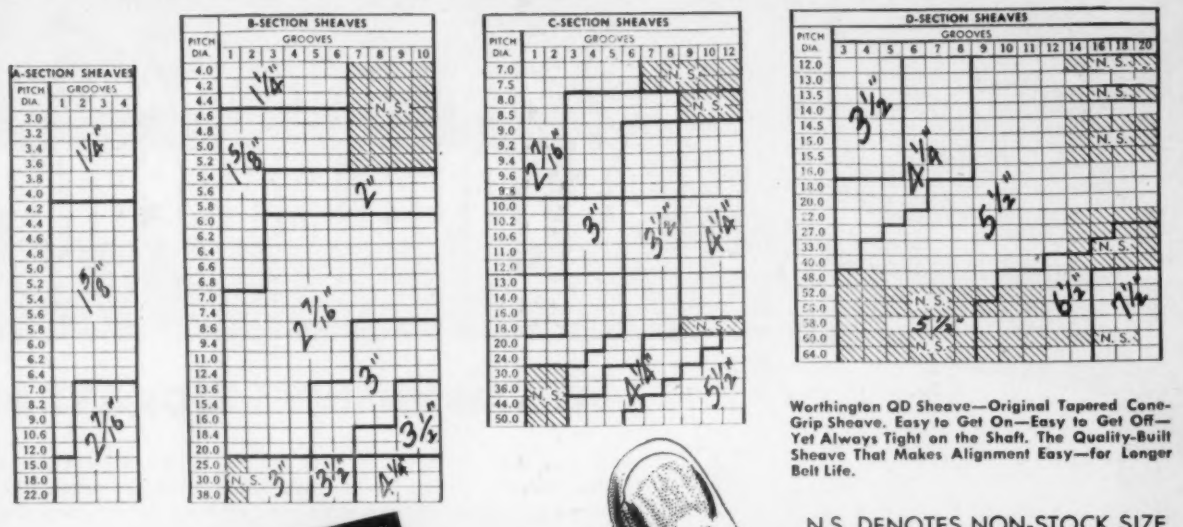
**For quick, dependable service—contact nearest Louis Allis or Foote Bros. Gear and Machine Corporation sales office—or write to the home office of either company.**

**FOOTE BROS. GEAR AND MACHINE CORPORATION**
4545 South Western Boulevard
CHICAGO 9, ILLINOIS

**FOR COPY OF GEARMOTOR BULLETIN WRITE TO EITHER COMPANY**

THE GOOD RIGHT HAND OF INDUSTRY

STOCK SIZES WORTHINGTON HEAVY DUTY "QD" SHEAVES WITH MAXIMUM BORES INDICATED




Worthington QD Sheave—Original Tapered Cone-Grip Sheave. Easy to Get On—Easy to Get Off—Yet Always Tight on the Shaft. The Quality-Built Sheave That Makes Alignment Easy—for Longer Belt Life.

N.S. DENOTES NON-STOCK SIZE




***to deliver your sheave immediately***

*As long as it takes our distributor's shipment to get there* is as long as it takes—in most cases—to get exactly the sheave you need into your hands. Your Worthington distributor has practically any stock size you'd ever call for—if he hasn't, one of the Worthington warehouses will get it to him in 24 hours or less.

Check your sheave requirements. With more sheaves listed as "stock sizes" and more sizes in stock than any other distributor, your Worthington distributor may be able to save you the cost of a special sheave.

Top-ranking distributors in every industrial center handle Worthington QD Sheaves and Worthington-Goodyear V-belts. They are backed by Worthington warehouses whose stocks duplicate the factory stock at Buffalo—more sizes stocked than any other sheave on the market. With 853 sizes in "A", "B", "C" and "D" sections, ½ to 600 hp, you can fill almost any rpm requirement with a *stock* sheave. Also: 332 listed stock sizes of EC Cord V-belts.

So, when you need sheaves, call your local Worthington Multi-V-Drive distributor—his name is under Worthington in A-Z Section of THOMAS' REGISTER.

**For Balanced Drive Performance**

Specify Worthington Multi-V-Drives, with QD Sheaves and Worthington-Goodyear EC Cord V-belts. (Goodyear EC Cord or Steel Cable V-belts are used exclusively in Worthington Multi-V Drives.)

**WORTHINGTON**

**WORTHINGTON PUMP AND MACHINERY CORPORATION**
**MULTI-V-DRIVE SALES DIVISION**
**Buffalo, New York—General Offices: Harrison, New Jersey**

*The Good Right Hand of Industry*

**POWER TRANSMISSION: sheaves, V-belts, variable speed drives**
**PUMPS: centrifugal, power, rotary, steam**
**AIR COMPRESSORS: water-cooled, air-cooled**

MVM92




# PUT YOUR PLANT AT YOUR FINGERTIPS

## WITH SIGNALING via GRAYBAR

Just flick a lever to call or talk with any key employee, anywhere in your plant! Clear, fast communication among your various departments will save many hours of time ordinarily lost in locating personnel, issuing urgent orders, and checking plant operations. Via Graybar, you can get all the proper equipment for every type of voice or code-paging requirement.

## *From "intercom" to siren*

There's Webster Electric Teletalk, an amplified communication system that connects you directly with personnel at selected points in your plant. It relieves switchboard congestion and saves countless steps through two-way or multiple inter-office conversations. There's the Edwards Lokator, a paging system that speeds location of personnel throughout the plant. Installations can be made with a wide variety of signals — from buzzers, musical notes or silent flashing lights to bells, horns, or howlers that will penetrate any plant noise. Or you may like U.S.I. Sound-powered Telephones. For common or selective talking systems, these hand-sets transmit distortion-free conversations over long circuits without external power! A rugged weatherproof set is available with magneto howler signals. For warning, Graybar has Benjamin and Federal sirens.

## Expert help in planning

There are Graybar offices in more than one hundred cities. Your local Graybar Representative will give you or your electrical contractor complete information on all types of talking, calling, warning, and locating equipment. The help of a Graybar Signaling Specialist is available in choosing the best combination of devices and accessories for your particular need. We offer you similar service in the selection and procurement of supplies for lighting, wiring, ventilation, and other electrical installations.

## *Send coupon for folder*

4999

GRAYBAR ELECTRIC COMPANY, INC.
420 Lexington Ave., New York 17, N. Y.

Please send me your free illustrated folder, "Signaling and Intercommunication Systems for Every Need."

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

*You get the best of everything electrical*
*Via* GRAYBAR

# PURCHASING

The National Magazine of Industrial Procurement

## NOVEMBER, 1949

Published monthly by Peeaye, Inc.
Subsidiary of
CONOVER-MAST PUBLICATIONS, INC.
Printed at: Orange, Conn.

Editorial and Executive Offices:

205 East 42nd Street, New York 17, N. Y.

Chicago Office:
737 N. Michigan Avenue, Chicago 11, Ill.

●

CONOVER-MAST PUBLICATIONS

PURCHASING
AVIATION OPERATIONS
MILL & FACTORY
CONOVER-MAST PURCHASING DIRECTORY
LIQUOR STORE & DISPENSER
CONSTRUCTION EQUIPMENT & MATERIALS

●

B. P. MAST.....Chairman of the Board
HARVEY CONOVER.....President & Treasurer
A. M. Morse, Jr....Vice President and Manager
Gilbert B. Ferris .....Secretary
Stuart F. Heinritz .....Editor
Geo. E. Henry .....Associate Editor
Paul V. Farrell .....Associate Editor
L. E. McMahon .....Production Manager
E. C. Arink .....Art Director
David Burke .....Associate Art Director
A. H. Dix .....Manager, Reader Service
A. N. Wecksler .....Washington Editor
National Press Building

Richard C. Grove .....Cleveland Manager
435 Leader Building, Cleveland

Forrest C. Pearson .....West Coast Manager
5478 Wilshire Blvd., Los Angeles 36

Advertising Representatives
Alex G. Graam .....New York
Ray Richards .....New York
C. R. Kingsley .....New York
H. L. Pelott .....Chicago
Wayne W. Geyer .....Chicago
Edward M. Buck .....National City Building
Dallas 1, Texas

ABC

## CONTENTS

| | Pages |
|---|---|
| Conover-Mast Editors Study Purchasing and Production in British Industry | 85 |
| Get Acquainted ..... *T. D. Hudson* | 89 |
| New Purchasing Office Layout ..... *D. G. Baird* | 90 |
| Vital Aids to Business Navigation ..... *J. G. Davies* | 95 |
| PURCHASING Reports on Purchasing Opinion How Will Currency Devaluation Affect American Business? | 97 |
| How to Lose Sales ..... *Phil Glanzer* | 99 |
| Imaginative Purchasing ..... *T. A. Dickinson* | 100 |
| Who Profits from Purchasing? ..... *S. F. Heinritz* | 103 |
| The Dollar and the Pound ..... *A. N. Wecksler* | 106 |
| Precision Castings by the Investment Method ... *L. A. Cuson* | 108 |
| Lost in the Crowd ..... *D. A. Laird* | 109 |
| How to Buy Lead ..... *K. W. Green* | 111 |
| Where We Stand Commodity and Business Trends | 123 |
| Plenty for Nothing ..... *Grey Leslie and John Shute* | 131 |
| The Purchase of Transportation ..... *E. L. Cady* | 135 |
| Improper Installation Can Ruin the Value of a Purchase *W. F. Schaphorst* | 139 |
| Stores and Inventory Control | 140 |
| Saving with Modern Space Heaters ..... *J. S. Wendt* | 142 |
| Experience Wins Law Suits ..... *Leo T. Parker* | 144 |

MONTHLY FEATURES

| | |
|---|---|
| Ask "Purch", New Trade Literature | 12 |
| F. O. B. | 62 |
| Purchasing Previews | 67 |
| Highlights of This Issue | 87 |
| New Products—Ideas | 156 |
| Office Equipment and Supplies | 221 |
| Among the Associations | 234 |
| Personalities in the News | 282 |
| Letters to the Editor | 322 |
| Buyer's & Seller's Mart | 324 |
| Index to Advertisers | 326 |

PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

VOLUME XXVII. NUMBER 5. Subscription rates: United States, U. S. Possessions and Canada: $4 per year, $6 for two years; elsewhere: $6 per year, $10 for two years. Single copies 50¢. Contents are indexed weekly and annually by the Engineering Index Service. Copyright 1949 by Peeaye, Inc., in the U.S.A.



PRESS OF THE WILSON H. LEE CO.
ORANGE, CONN. PRINTED IN U.S.A.

*WRIGHT EQUIPMENT is used in many new buildings at Caterpillar Tractor Co., Peoria, Illinois. Shown here are 3 of 10 Wright Speedway No. 2 Frame Electric Hoists on one of "Caterpillar's" scraper assembly lines.*



WHERE BUYERS ARE "CHOOSY" THE CHOICE IS

# WRIGHT



## We like to do business

with the type of buyer who's "from Missouri"— who makes his own performance tests on the job—whose idea of value is based solidly on such tests.

Send for your copy of the descriptive folder DH-65. Your nearby Wright Distributor or Wright District Office can supply you. Or write direct to us in York, Pa.

ACCO

York, Pa. · Chicago · Denver · Detroit · Los Angeles · New York
Philadelphia · Pittsburgh · Portland · San Francisco · Bridgeport, Conn.

HOISTS
TROLLEYS
CRANES

WRIGHT HOIST DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

*In Business for Your Safety*

# Conover-Mast Editors Study PURCHASING and PRODUCTION in British Industry




Stuart E. Heinritz

AS THIS ISSUE goes to press, the Editor of PURCHASING is in England, engaged in a first-hand study of industrial purchasing as it exists under a socialist state-controlled economy. This assignment is part of a larger project, in cooperation with Carl C. Harrington, Editor of MILL & FACTORY, who is making a corresponding study of the production phases of British industry.

This joint editorial mission is undertaken with an open mind. It has but one objective — to get the facts, in terms of the concrete and measurable elements of purchasing and production costs and results. This composite picture of the two major elements of manufacturing cost, supported by the factual record, has never before been presented. We believe that it is an approach of enormous significance from the industrial angle, and from the social and political angles as well. We don't know what the findings will be, but they will be reported as we find them.

And these facts are desperately needed. The United States has traditionally followed Great Britain's lead in social philosophy, and we are doing so today. If the British system is best for the national welfare, strength and security, and for the good of the common man, we should have the facts to support such a course, rather than placing reliance on assertion, emotion, and propaganda. We should then encourage, rather than resist, the trend to socialization.

But if, on the other hand, the facts show that the American system of free enterprise is right, we also need the facts, that we may not follow too far along the road to statism. If the facts show that British socialism is weakening industry and defense, lowering standards of living, and leading the common man to his own destruction, we should marshal every available fact to the end that we may bend every resource and every ounce of energy at our command toward resisting the influences that would lead us away from free enterprise and competition in industry.

The American system is rooted in a deep conviction that a nation's trade position, economic health, national security, and high living standard depend primarily on the twin functions of efficient purchasing and productivity. These are the factors that have made us strong, and the destiny of the world demands that we maintain that strength. The Conover-Mast editors are specialists in these two basic fields, in a unique position of knowledge and experience to evaluate the facts as they find them, and to compare them with the American way. Their access to the fundamental data, and authoritative interpretation of the facts, has national significance.

Whatever the results of this study may be, they are bound to be of profound interest and importance — not only to the men in purchasing and production, but to every individual concerned with management, labor, economics, and government, in shaping the course of national policy. We are at the point of decision, and our decision must be right. It determines the well-being of every man, woman, and child in America, and the generations of the future.

Watch for these reports, starting in our December issue.

Harvey Conover PRESIDENT




***The millions who cooked in aluminum wanted to wash in aluminum, simply Because ALUMINUM LASTS***

Sounds simple.

But to make that shining washing machine tub of yours come true, a lot of things had to happen. Alcoa made them happen.

Developed the right aluminum alloy. The right way to produce a smooth, one-piece tub from a flat sheet. The right way to give it a glass-like finish that's part of the metal. Didn't just *say* it would last. *Proved it!*

Finding the one right way to do each of those things was a burden we shouldered gladly. That's part of our job . . .

So that things of lasting Alcoa Aluminum will be good buys for you. ALUMINUM COMPANY OF AMERICA, 1908L Gulf Bldg., Pittsburgh 19, Pa. Sales offices in principal cities.

# ALCOA

**FIRST IN ALUMINUM**
**THE METAL THAT LASTS**

# Highlights

This issue's important features summarized for the busy reader



The announcement on page 85 tells of a project that promises to be of major importance to the national industrial and economic policy. Conover-Mast editors have spent the past month in England and have there made a comprehensive first-hand study of how business is done under a socialist-statist type of government. In this study particular attention has been given to the factors of purchasing and production, in the belief that product costs hold the basic key to economic recovery, trade balance, and living standards. The story of **Buying in Britain** will be of more than academic interest, for it indicates the pattern that may confidently be expected in any country where the trend toward state controls is permitted to gain the ascendency. Watch for these reports in succeeding issues.

The second of NAPA's "How to Buy" prize papers appears on page 111. This comprehensive treatise deals with the subject of **How to Buy Lead.** The author describes the structure of the mining and refining industry, the allocation of lead supplies to various product uses, and production statistics on a world-wide basis.

Should the purchasing department have responsibility for **Control of Stores?** A recent survey of management practice on this disputed point shows the majority of companies in favor of placing stores and inventories under purchasing jurisdiction, and a steady trend in this direction. For detailed results of this survey turn to page 140.



Successful **Business Navigation** depends on constant and intelligent attention to the factors that determine the course of business. Many people agree that public and business confidence would be a most reliable indicator, but regard it as an intangible factor incapable of accurate measurement. In a practical and thought-provoking acticle on page 95, Julian Davies points out to buyers that there are a number of readily available sources of current statistical information that provide a significant measure of the degree of general confidence in the future of business. This is important reading for the buyer who needs to know how business is going.

Of timely interest to purchasing agents who are faced with a problem of winter heating of open factory areas is the analysis of **Space Heating Costs** that appears on page 142. Modern equipment shows substantial savings in direct costs compared with old-fashioned hand-fired units, plus additional advantages in greater comfort, greater safety, and better utilization of space.

This month's **Guest Editorial** (page 89) is contributed by the NAPA Vice President for District 6—Tom Hudson of Cleveland. His topic is "Get acquainted with your fellow PAs"—a theme that is typical of the man and aptly descriptive of one of his notable contributions to Association work.



When the purchasing department at Nash-Kelvinator Corporation needed more space for expansion, they took the opportunity for thorough revision of **Office Layout** and modernization of office furnishings, resulting in a more convenient and efficient arrangement, better working conditions, and making a more attractive first impression upon business callers. Details of the new layout are illustrated and described in the article starting on page 90.

The **Devaluation** of foreign currencies and the probable effects of this policy on American business are discussed in two editorial features of this issue. Our Washington editor contributes a broad analysis of the situation on page 106, with the specific outlook for major commodity groups. It has also been selected as the subject of this month's Purchasing Opinion survey, reported on insert pages 97 and 98.

There's a wealth of valuable information that's yours for the asking, and available from no other source, in **Government Information Services.** The article on page 131, with accompanying chart, provides an index to the wide variety of helpful business data that can be obtained from various departments and agencies.

In addition to his buying responsibilities, the purchasing agent is a department head and **Administrator.** A practical psychologist offers some sound advice for keeping employee morale at a high standard. Turn to Dr. Laird's article on page 109.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 12) and the illustrated summary of **New Products and Ideas** (page 150) will help you keep abreast of industrial progress.



# Ryerson Steel Service Pays 4 Ways!

## 1. *Quick Delivery*

Maintenance jobs keep moving—production delays are avoided when you call Ryerson for promptly needed steel. Thirteen conveniently located Ryerson plants mean shorter shipping distances, assure fast delivery of your requirements to any point in the nation.

## 2. *Highest Quality*

Careful specifying and checking of all stocks assures uniform high quality—Ryerson Certified Steel. Careful handling of your orders by experienced personnel assures accurate compliance with your specifications.

## 3. *Large Stocks*

With large, diversified Ryerson stocks nearby, you can cut costs by holding your own inventory at a practical working level. Ryerson stocks serve as your inventory reserve. You can draw on these stocks for almost any current need.

## 4. *Complete Service*

To help you solve your steel problems, Ryerson steel specialists will gladly counsel with you. Their recommendations are backed by more than a century of experience. You can depend on us for prompt, personal service whether you need a single bar or a carload.

**Principal Products**

**BARS**—carbon & alloy, hot rolled & cold finished
**SHAFTING**—cold finished, ground & polished, etc.
**STRUCTURALS**—channels, angles, beams, etc.
**PLATES**—sheared & U. M., Inland 4-Way Floor Plate
**SHEETS**—hot & cold rolled, many types & coatings
**TUBING**—seamless & welded, mechanical & boiler tubes
**STAINLESS**—Allegheny bars, plates, sheets, etc.
**REINFORCING**—bars and accessories
**MACHINERY & TOOLS**—for metal fabrication

RYERSON CERTIFIED STEELS

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI
CLEVELAND • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

# For STEEL in a hurry call RYERSON



*Want Additional Product Information? See Page 19.*

# GET ACQUAINTED

• By Thomas D. Hudson



FOR some years, I have been vigorously advocating membership in N.A.P.A. and in the local Associations, stressing this theme whenever I have had the opportunity to talk to purchasing agent groups in various localities. Association membership is a valuable tool for any purchasing agent; it sets up a standard for the buyer to get acquainted with fellow PA's.

It goes without saying that personal contact is most important in all business relationships. I believe that the personal touch is even more important in our field than in any other phase of business. Knowing the other fellow goes hand in hand with understanding him.

The impressions formed about a company are based, to a very large extent, on the courtesy extended to sales representatives of other companies by the purchasing department. The No. 1 rule in the company with which I am connected is that every caller is entitled to utmost courtesy. That doesn't mean, of course, that a purchasing agent for the company is expected to be a "push-over", because it is a foregone conclusion that many times there can be no immediate or tangible result from the interview. But at the same time, the caller is entitled to a friendly reception and, if necessary, the opportunity to discuss his proposition with a representative of some other interested department without unnecessary delay. Whether or not a sale materializes,

(*Please turn to page* 314)

**Thomas D. ("Tom") Hudson is Assistant Purchasing Agent, Cleveland and Pittsburgh Districts, American Steel & Wire Company (U. S. Steel Corporation subsidiary), with headquarters in Cleveland. A past President and National Director of the Cleveland Purchasing Agents Association, he is currently serving as Vice President of the National Association of Purchasing Agents for District 6, which includes the Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Erie, Northwestern Pennsylvania, Pittsburgh, Springfield, Toledo, Tri-State, and Youngstown District Associations.**

**A native of Pittsburgh, Tom's early ambition was to follow in his father's footsteps, in the practice of law. These plans had to be changed, however, when he was orphaned in his teens. He went to work for the Carnegie-Illinois Steel Corporation, continuing his education with evening courses for five years.**

**Tom has had only one "boss" since he started to work. He has been continuously in the service of his first and only employer— the U. S. Steel Corporation or some subsidiary—for 34 years. From Carnegie-Illinois, he was transferred to the Pittsburgh-Conneaut Dock Company, where he got his first taste of purchasing work. He has been with American Steel & Wire since 1942.**

**In his active Association membership, he has been an enthusiastic exponent of the friendly "get acquainted" idea expressed in his editorial message. As Chairman of the Membership Committee from 1942 to 1944, he was instrumental in raising the membership of the Cleveland Association from 235 to 380 members. In the broader field, he has made a host of friends throughout the Sixth District and in National purchasing circles through attendance and active participation at district and national meetings.**

**Tom is married and has a 13-year-old son, Bill. He is a member of Lakewood Presbyterian Church and the Lakewood Lodge of Masons. His hobbies are flowers and baseball.**

***Better Working Conditions . . . . .***
***Better First Impressions . . . . .***

# NEW PURCHASING OFFICE



Vice President A. M. Wibel, Nash-Kelvinator Corporation, confers with Harry Turner and John L. Brown, two of his assistants.

**Rearrangement of space eliminates distraction of noise and office traffic.**

**Buyers have privacy coupled with accessibility to callers and to office services.**

**Modern design and equipment in lobby and offices helps workers and impresses callers.**

***By Dwight G. Baird***

THERE'S a new spirit, as well as a "new look" in the purchasing offices of Nash-Kelvinator Corporation, Detroit. These offices recently have been completely renovated and modernized in every respect, and those who occupy them are justifiably proud of their new and improved surroundings and facilities. Guests are favorably impressed also, and many of them go so far as to characterize the new purchasing offices as the most attractive in the industry.

These are quite natural results of such improvements, of course. In fact, they are exactly what the management had in mind when it decided to make the changes. As A. M. Wibel, Vice President of the corporation who, among other duties, is in charge of procurement, stated their thinking on the subject:

"The renovation and alteration of our purchasing offices and reception lobby had two basic objectives—operating efficiency on the one hand, goodwill on the other.

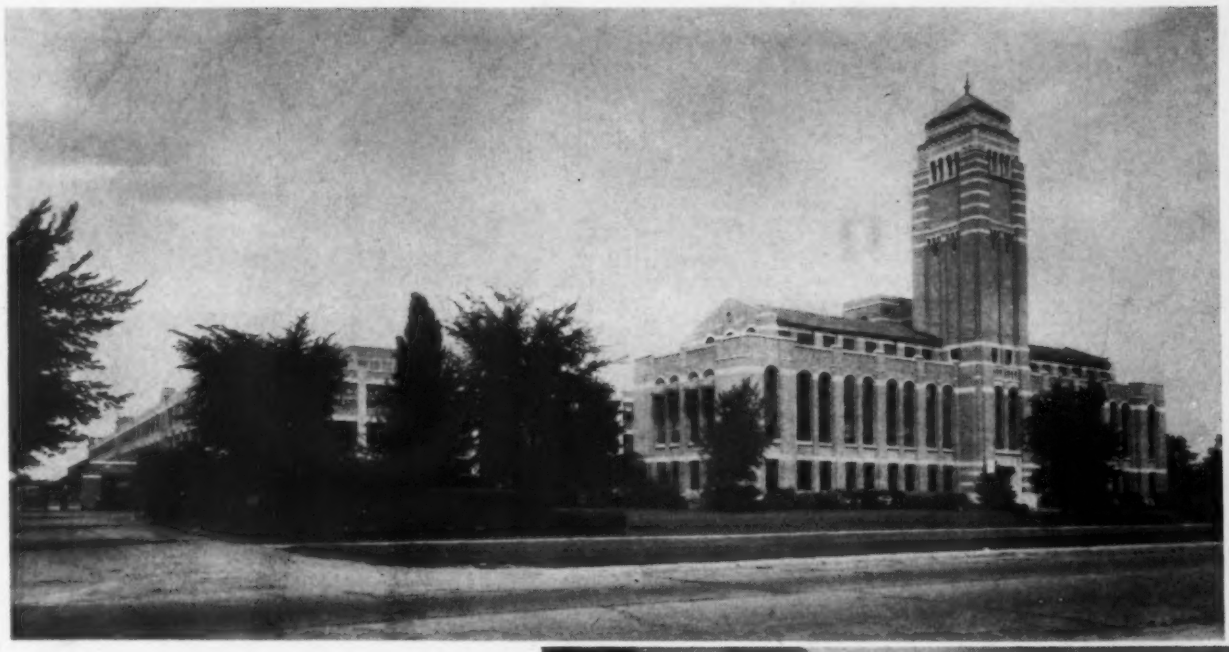
"Physically, the offices were quite cramped and the facilities had not kept pace with the corporation's expansion. Our business volume now is running well over $300 million annually, as compared with about $70 million in 1940. We needed more space and better organization of the space to give us the efficiency we wanted in our expanded purchasing operations.

"Like free enterprise itself, purchasing involves the full force of both cooperation and competition. Buyers not only do a better job when they are part of an efficient system, but they are in a better competitive bargaining position when their prestige is not handicapped by inadequate quarters, both as to size and appearance.

"From a goodwill standpoint, we realize that many people, whether they are customers or vendors, often gain their most important impression of any company from its physical side—the appearance of the offices they visit, the reception lobby, the building itself. External appearances are a strong influence in goodwill, and we wanted to make certain that we not only have the capacity to build great products, but also that we *look* as though we can.

"We have progressed a great deal since our purchasing offices first were designed as 'the last word', and we wanted to bring our 'front' up to the level of our progress in every other direction."

# LAYOUT at Nash-Kelvinator Corp.





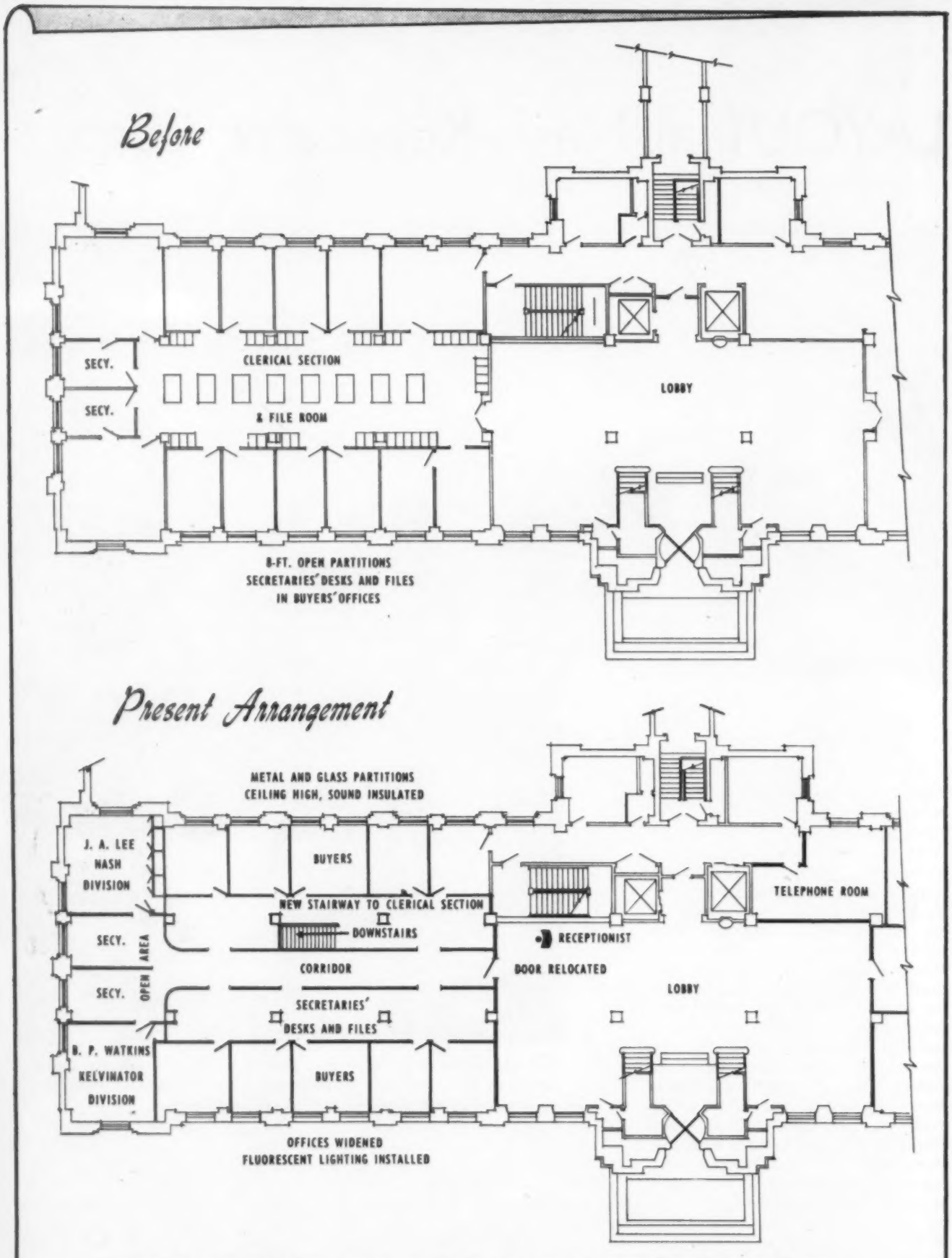
**The administration building and grounds of Nash-Kelvinator make a favorable first impression upon callers; that impression is heightened upon entering the newly renovated reception lobby.**

Purchasing offices of the Kelvinator Division formerly shared the west wing of the ground floor of the administration building with executives of several other departments, including the general office manager, traffic manager, and manager of the Real Estate Department. Those of the Nash Division had the main office at Kenosha, with branches at Milwaukee and Toronto. Now the main office is located in Detroit. As the main offices of the corporation are in Detroit, though, and as the research department is also located there, it was desirable and logical to centralize control of purchases of the Nash Division at the home office where the Director of Purchases would be in close contact with the top management. For these reasons, James A. Lee, Director of Purchases of the Nash Division, and two buyers of Nash accessories and service parts were moved to Detroit in August, 1948. To make room for them in the purchasing wing of the administration building, executives of other departments mentioned above were moved to other quarters.

But still more room was needed to accommodate the expanded purchasing operations of both Nash and Kelvinator, and an over-all alteration and renovation of the purchasing offices was desired to attain the objectives mentioned above by Mr. Wibel.

### *Problem of Overcrowding*

The clerical section of the Purchasing Department occupied an open office area some 20 feet wide and 56 feet long in this wing, with individual buyers' offices on each side of it and those of the two department heads and their secretaries at the west end. Buyers' secretaries occupied their offices with them, thus making the offices over-crowded. Partitions were only eight feet high. Sound traveled freely throughout the area, producing a confusion of telephone conversations, personal conversations, general conversations, and the noises of office machines and




BEFORE AND AFTER PLANS OF PURCHASING DEPARTMENT LAYOUT
IN WEST WING OF ADMINISTRATION BUILDING
NASH-KELVINATOR CORPORATION, DETROIT

equipment. Filing cabinets of the clerical section were ranged along the partitions in front of the buyers' offices and the necessary use of them and traffic about them contributed to the noises and distractions.

### *Rearrangement of Space*

To provide more room for the purchasing offices and to eliminate the noises and distractions occasioned by the clerical section, the latter was moved to the basement in the same wing. To provide convenient access to it from the Purchasing Department, a stairway was built.

A corridor, 6′6″ wide and 56′ long, leading from the reception lobby through the Purchasing Department was created by installing sound-insulated steel paneling and Flutex glass. Paneling is in grained walnut finish and is flush with the ceiling. Glass sections are 42″ above the floor, are 42″ high and vary in width from only a few inches to 48″. Near the west end, corridor walls curve to right and left, leaving an open area for desks of the two department heads' secretaries facing the corridor.

Between the corridor and the buyers' offices on each side of it is an open area, 8′9″ wide and 56′ long, in which the buyers' secretaries have their desks and files. Each corridor wall is broken by three doorways and buyers' secretaries are stationed so that callers have to pass their desks to reach the buyers' offices.

Between the secretarial area and the individual buyers' offices on each side is another metal-and-glass partition, flush with the ceiling. The glass panels here and between buyers' offices are clear.

There are five buyers' offices on each side of the corridor. All are uniformly 12′ deep; their width varies from 10′ to 13′. Offices of the directors of purchases, Mr. B. P. Watkins, for Kelvinator, and Mr. James A. Lee, for Nash, are located at the west end of the wing, one on each side. Each office is 15′3″ x 16′6″ and has walnut grain metal wainscoating which conceals the radiators and piping. Cabinets built in the east wall of Mr. Lee's office provide storage space for automobile accessories, trims, parts, and samples of various kinds. The upper sections of these cabinets open into his office, while the lower sections of them open into the office of the buyer next to it.

The ceiling throughout was covered with acoustical tile. That of the corridor was lowered two feet to prevent producing a canyon effect of high walls and narrow corridor.

Lighting throughout is fluorescent. In the corridor and in the offices of the department heads it is of recessed troffer type; elsewhere the lamps are mounted in fixtures suspended from the ceiling.

### *Accessories Modernized*

The floor is covered with inlaid linoleum in a marbleized pattern except in the offices of the department heads and their secretaries, where it is covered with warm brown Gropoint type carpet. Consideration was given to carpeting the corridor, but this was decided against because of the difficulty of keeping carpet clean in a busy area, such as a Purchasing Department, particularly in winter.

The best of the old furniture was moved to the basement to be used by the clerical section and all new furniture was provided for the purchasing offices.

Each of the department heads' offices is furnished in bleached walnut. Desks are 87″ x 44″ and are of the over-hang type. A table to match the desk is 69″ x 30″. A bookcase, with solid wooden doors, and a telephone stand, waste basket and costumer are of the same material. The executive's chair is of the swivel, arm-type, upholstered with red leather. There are seven guests' chairs in each office and another in each secretary's office. All are of bleached walnut and red leather.



**James A. Lee, Director of Purchases, Nash Division, in his new office. The furnishings are eloquent of modernity, dignity, and efficiency.**



**B. P. Watkins, Purchasing Agent for the Kelvinator Division. Secretaries to the two chief purchasing executives are located in an open area facing the corridor, and conveniently adjacent to the entrances to the respective private offices.**

All buyers and their secretaries were furnished new metal furniture of latest type. Buyers' desks are of the double-pedestal type, with 5" overhang on each end and at the rear. They are 70" x 35" in size and are 29"-30" high. Each has two letter drawers, four small storage drawers, one large drawer and one center drawer. The top is covered with fine-textured linoleum and has rounded edges and corners. All metal furniture is finished in special polychromatic beige color and has sound-proofing features. The buyers' chairs are of the swivel, arm-type, with cast aluminum frame and brown leatherette upholstery. A bookcase, waste basket, and costumer in each buyer's office matches the other furniture. Two guest chairs in each office and one outside of each have aluminum frames and brown leatherette trim. Each buyer has two outside telephone lines and a Bell Telephone signal connecting his desk with that of his secretary.

Secretaries have metal typewriter desks, posture-type chairs with 2½" latex rubber seats, filing cabinets, waste basket, and costumer, all finished in polychromatic beige color. Filing cabinets are of the drop-front, 3-drawer type and are "partition high" so that they are not visible through the glass panels in the partitions, and are all finished to match the desk color.

**J. A. Eubank's office is typical of the new arrangement for buyers, providing adequate space and privacy. Steel desks with overhang top are ideal for interviews.**



**Buyers' secretaries now occupy open area partitioned off from corridor (left) and buyers' offices (right). Persons calling on a buyer must first pass the secretary's desk.**



The reception lobby also was completely renovated. The former precast, ornamental plaster ceiling and period lighting fixtures were replaced with fissured acoustic mineral tile and recessed fluorescent lights. The dark mahogany woodwork was bleached and finished with clear lacquer, and the room was completely refurnished.

### *Lobby Has "New Look"*

Former furniture included a receptionist's desk that was just an office desk of conventional size and type, a big mahogany magazine table, four old-style chesterfield sofas, six arm chairs, and three straight chairs.

Upon entering the newly transformed reception lobby one faces the main elevator entrance which is flanked by impressive portraits of the late Mr. C. W. Nash, founder of Nash Motors, and of Lord Kelvin, whose discovery of the physical laws behind mechanical refrigeration is perpetuated in the name Kelvinator. At either end of the lobby are large photomurals of placid home and inviting highway scenes dramatizing the company's motto: "Dedicated to better homes and better transportation—Nash-Kelvinator Corporation."

Generous and inviting seating accommodations include 70′ of lounge sofas and chairs of gray-green top grain leather that flank the walls and curve the corners to allow for large and low circular magazine and company literature tables as focal points. The new reception desk is a generous 3′ by 8′ blonde mahogany piece that curves out from the wall and easily accommodates registry pad and communication equipment. Adjacent to the receptionist are chairs for the guide attendants. A large employment application desk that seats four is ingeniously divided for privacy by a plexiglas enclosed planting area. Soft gray-green draperies and carpets complete the setting of a warm and inviting atmosphere which has stimulated praise.

The planning of the allocated space and the selections of furnishings of the purchasing activities as well as the lobby were done by Don Mortrude, industrial designer who is retained by Nash-Kelvinator as a consultant on corporation properties.

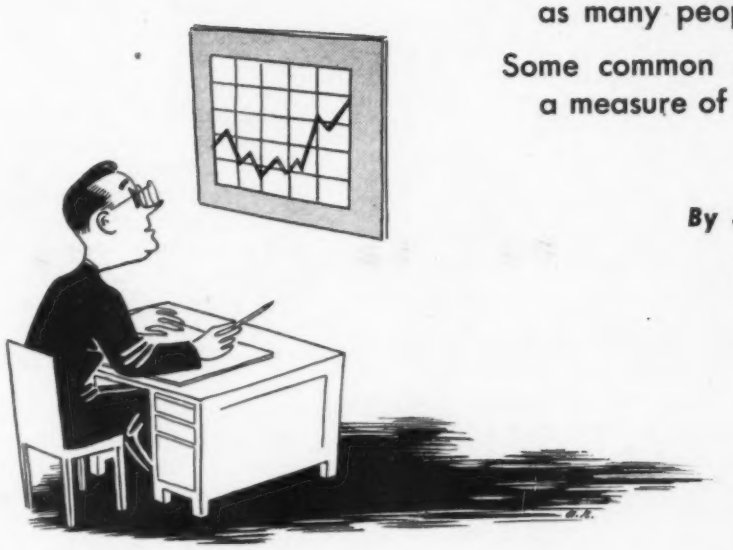
To say that everyone concerned considers this one of the best investments the corporation has ever made is an understatement.

# Vital Aids to Business Navigation

**Confidence is the determining factor and key to business conditions and outlook.**

**Business confidence is not as "intangible" as many people believe.**

**Some common statistical indicators giving a measure of the business state of mind.**



**By *Julian G. Davies***
Purchasing Agent
N. Slater Co., Ltd.
Hamilton, Canada

ONE of the petty perplexities of life is how to concentrate on reading matter in a railroad club car when conversation is humming all around us. When a discussion centers on something in which we are particularly interested we can keep up a pretense of reading, while keeping abreast of the conversation, or we can conform to our natural dislike of eavesdropping, close the book, and attempt to "horn in" to the bull session.

Recently, following a convention of industrial management personnel, a group of those attending were gathered in one end of the club car en route to their homes. A feeling of relaxation and good-natured banter, to the accompaniment of suitable refreshments, all served to induce a sense of free-wheeling talk and good-fellowship.

Naurally, the conversation centered on the business aspects of the convention. One said, "Why is it that an address on economics leaves many of us cold? Is it because most experts on economics are naturally factual, analytical, and unable to bring out the dramatic features of their subject? After all, what could be more interesting to us than a well-considered forecast of business trends, with the evidence supporting the prediction? Our jobs, our bread-and-butter, depend on the accuracy of our plans for the future, so why shouldn't we be keenly interested?"

"It seems to me," continued another," we have been misled so often we lack confidence in the ability of the average economist to give us a really reliable chart on what lies ahead. Also, there are so many 'ifs' and 'buts' injected into their talks that when they get through we are too confused to know just where they believe we are headed."

"Most of us," added a third, "if we had the time and inclination, could figure out such things for ourselves, but we don't. Instead, we rely too largely on the opinions of our friends and associates, who are really no better informed than we are."

This seemed an opportune moment to inject my contribution. "I suppose that you gentlemen, like many other businessmen, like to read detective stories, yet economics bore you. I have often wondered why this should be when the framework of the detective story is almost exactly the same as that on which a business forecast rests. In the story, the basic fact that there has been a murder, or the madam's jewels have been 'lifted', comes first. By deductive reasoning, we work back from that point. In a study of future business trends, we first develop and assemble our clues, determine their proper relative value, then decide whether these deductions of ours point to a high-class murder, in the form of receding business, or whether the final development will be greater production, or a fairly stable business trend."

All of them admitted they hadn't looked at the subject in that light, but one stated he did rely on his director of purchases, who had recently been elected to the board of directors, to call the turn. He had been remarkably successful—so much so, in fact, that his appoint-

ment as a company director was the logical acknowledgment of his forecasting ability.

What are these aids to business navigation for which we should watch?

Getting down to bed-rock, we can be sure that the future trend of sales of merchandise and services, industrial production, the stock market, employment, consumer purchasing power, and many other factors in the business picture, in the final analysis, all depend on *Confidence.* The degree of confidence in the minds of the business community and the consumers of this country, and of the countries with which we hope to conduct much of our foreign trade, will determine the future trend of business in general, and of the opportunities and prospects for our own business. Most of these measures of confidence are supplied regularly in governmental publications, and are frequently commented on by business and trade publications. Here are some of the factors that should be watched:

*Ratio of Inventories to Production and Sales.* When large inventories overhang the market, particularly after the peak of a business cycle appears to have passed, manufacturers will not continue to work at full capacity to produce more inventory until there is a good prospect of much of the existing inventory being absorbed. The relation of volume of inventory to consumption bears a direct and most important relationship to the trend of future business.

*Inflow of New Corporate Investment Funds.* An even more reliable indicator is the inflow of new corporate investments into plant expansion. The trend of volume of corporate investment in producing capacity is a reliable indicator of confidence in the future on the part of business management.

*Building Statistics, Including Road and Municipal Construction.* If heavy expenditures of governmental funds on roads, hospitals, schools, and other public improvements are added to the current volume of regular producer-consumer trade, the increased spending power thereby created, flowing into the hands of consumers, is bound to exert a stimulating influence on future business.

*Trend of "Sensitive" Commodity Prices.* Changes in the price trends of the more volatile or sensitive commodities are usually one of the first indicators of a change in direction of the trends of business and of confidence, and should receive special attention.

*Volume of "Short Selling" on the Stock Markets.* Short selling does not usually expand if there is widespread expectation that the trend of business will be upward. An increase in short selling indicates the opinions of many smart operators that the future trend will be downward.

*Trend of "Futures" Prices.* Properly interpreted, futures markets are important indicators of the degree of confidence in the minds of experienced buyers and sellers of the commodities dealt in. Some factors influencing futures prices are:

(1) Hedging operations, a common practice in dealings in cotton, coffee, grains, metals, and some other commodities;

(2) Seasonal price trends;

(3) The future relation between supply and demand; and

(4) The degree of confidence in the future trend of business.

By studying the existing conditions surrounding the first three factors, the influence of the fourth can usually be closely estimated.

*Stock Market Trends.* The trend of the stock market is usually an excellent indicator of *confidence,* rather than of current business trends. The stock market did not respond to the tremendously high level of business, profits, and dividends during the past two or three years, because of lack of confidence in the longer-term outlook. The stock market can continue to be looked upon as a significant gauge of confidence in the future.

*Transactions in Top- and Medium-Grade Securities.* Few types of businesses have suffered more severely in recent years because of low interest rates than insurance companies and investment trusts. Security of principal is their prime requisite, but an adequate return on their investment funds is highly important also. When there is a high degree of confidence, these large investors switch a portion of their funds from high-grade to second-grade bonds, or to preferred stocks, because of the higher interest return. When confidence appears about to recede, their funds are returned to top-grade investments, foregoing the higher interest return in preference for greater safety of principal. These movements may be followed fairly closely by absorbing news items in financial papers, from statistics in government reports, and through other contacts.

*Business Failures.* The trend of business failures continues to be a reliable guide as to the future of business.

*Volume of Money in Circulation.* Any marked decrease in the volume of money in the hands of consumers usually presages a drop in business, just as more money indicates greater demand.

*Consciousness of Our Position in the Business Cycle.* To discount or ignore entirely the existence of cycles in business, as many are inclined to do, seems the height of folly. The history of business furnishes ample proof of the positive influence of cycles on business trends. We should avoid the too common assumption that the longer a specific trend has been maintained, the more confidence we should have in its continuance. Rather, we should realize that each additional week or month a trend has continued means one week or month less before its direction will change, and plan accordingly.

Agricultural production and marketing, volume of foreign trade, and other factors might well be enumerated, but the foregoing will be sufficient to indicate our general line of study if we wish to gauge effectively the degree of business confidence prevailing at any given time.

In addition, there are usually certain imponderables which may well influence our calculations. For instance, we know that the "cold war" in Germany exerted a highly injurious effect on business thinking. The approach of the Chinese Communist armies to Formosa and Hong Kong, and the heretofore undisclosed extent of their support by Moscow, can produce similar uncertainties in the future.

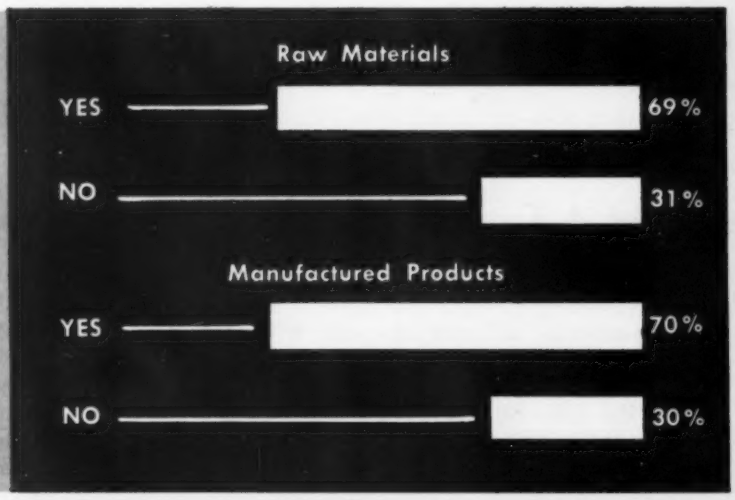
Regardless of such future eventualities, we should fix in our minds just what these indicators of business confidence are. Then, when in our reading and listening we come across items which bear directly on any of them, the possible effect of that news will register, perhaps subconsciously, on our minds, and our opinions will be formed almost automatically. With practice, we can expect to attain a high degree of proficiency. The ability thus gained can greatly facilitate our participation in the councils of management, and enhance our value to our associates. Doing our own forecasting by that method can be counted on to prove much more dependable than to rely on the opinions of our friends.

PURCHASING OPINION

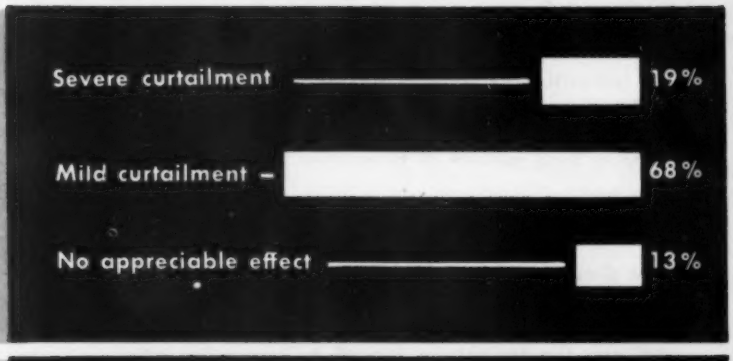
# How Will CURRENCY DEVALUATION Affect American Business?

*The recent devaluation of the British pound, and other foreign currencies, is being studied closely by experts for its probable effects in many different fields. The most immediate effects will undoubtedly be felt by business and financial groups. Because their duties make them familiar with many of the important factors involved in the relationship between devaluation and foreign and domestic commerce, we have asked a cross-section of purchasing executives for their opinions on the probable results of devaluation from the American businessman's point of view. Their combined answers are shown below.*

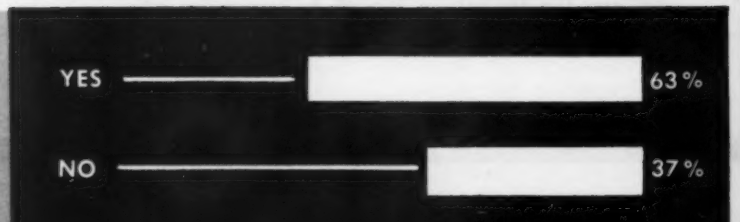
**1** Do you anticipate that the devaluation of foreign currencies will result in lower prices for commodities produced in those areas?



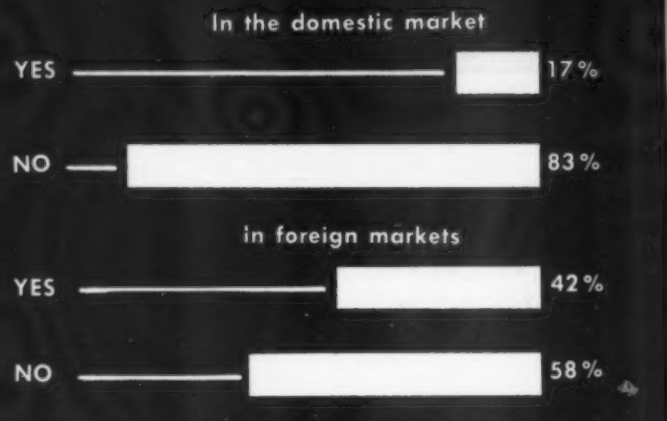

**2** How do you think the new currency situation will affect exports of American goods?



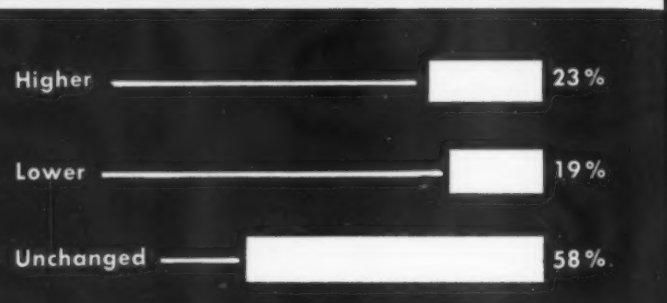

**3** Do you expect that competition from foreign sources will improve the position of American purchasing agents?



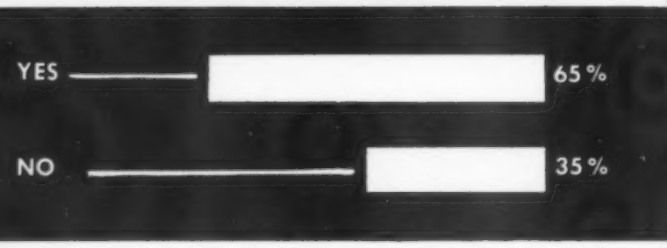
**4** Do you expect greater competition from foreign producers in the products produced or sold by your company ?




**5** In view of the new situation, do you favor a higher, lower or unchanged general U.S. tariff policy ?




**6** Considering devaluation from the long view, do you believe it will restore a more normal balance in world trade ?




## WHAT THEY SAY

"Devaluation will tend to create a more authentic and actual value on foreign currency and result in a more stabilized balance of trade. The scramble for the dollar will be on a more equitable basis."

"From a selfish point of view, a higher tariff would help U. S. manufacturers, but inasmuch as we have to support Europe anyway by donations, let's put it on a business basis."

"In general, devaluation should mean lower costs to American business, and if these are passed on to consumers in the form of lower prices, it should mean a long period of prosperity in this country."

"To date, no one has clearly and concisely proven that devaluation will do any of us any good."

"We should not be so foolish as to ship across baled cotton or any other raw material and then buy it back at three or four times the price we received and pay the freight on top of it. It may be good politics but it is sure poor business."

"Assistance to Atlantic Pact nations through lower tariff would decrease amount of loan and gift money required in immediate future with diminishing amounts as foreign production increases. Our benefits would derive from stabilization of domestic labor-management relations brought about by resultant competitive markets."

"Only through free trade with adequate safeguards enjoyed by the whole world can we get anywhere. If one cheats, all suffer."

"One thing is sure — sooner or later we will have to devaluate the American dollar."

"Unless U. S. goes to a completely regulated currency, it would seem that the dollar-pound relationship will ultimately reach the pre-devaluation ratio."

"England's commercial policy is ruthless. Our administration in Washington is permitting her to impose unnecessarily harsh discrimination on our historic legitimate export trade in many markets."

# How to Lose Sales and Influence Purchasing Agents the Wrong Way

**Some salesmen, not all, are quite efficient in disturbing the P. A.'s equilibrium.**

**Noblesse oblige and even ordinary etiquette often minus in sales presentations.**

**Lack of interest after receiving order is source of varied troubles and irritation.**

***By Phil Glanzer***

●

THE following irritating mannerisms and incorrect methods of selling were real criticisms obtained from interviews with purchasing agents. They were directed not only at inexperienced salesmen, but toward many salesmen with over 10 years' experience in so-called selling. They do not apply to the majority who presumably need further training.

Leave your hat on. There's no reason to show the purchasing agent any particular courtesy. After all, he's only your bread and butter. Besides, it shows your taste in hats—if nothing else.

Be a spellbinder. Keep your mouth open and moving from the time you walk in until the time you go out. Don't let the purchasing agent get a word in sideways. Who knows more about the international situation, the political ups-and-downs, hockey, baseball and football progress than you? A lot of people have made money in the monologue business. You might even wind up as a circus barker.

Go beyond friendliness. Don't let the P.A.'s desk separate him from your sales talk. Get over on his side. Stand right beside him so that he will have to crane his neck back to see you. Breathe down his back—it convinces him you're human. Tap his shoulder every so often to see if he's awake or to rap home a sales point. Give him a hearty slap on the back as you leave—he may have indigestion and be grateful enough to place a $50,000 order then and there.

Be a "Big Shot." Make it quite clear to the purchasing agent that you're doing him a favor by seeing him at all. Be sure that he's conscious of the fact that compared to your other business "deals", he and his company are pretty small potatoes. It convinces the P.A. that he's ordering from the right people—other people.

Let nothing interrupt a good story. If you're telling the P.A. an off-colour story and his secretary or other office girl walks in, keep going. It shows perseverance. The fact that both the P.A. and the girl may be embarrassed doesn't mean a thing. After all, they're human. Your story will probably keep their families in stitches for weeks.

Knock your competitors. Let 'em have it—right between the eyes. Give the P.A. innumerable case histories where your competitor's products have broken down or failed in an emergency. You might keep a file of these for ready reference. If you should sell him, and should your own product fail to measure up, it also proves that nothing is perfect—a good lesson for anybody, even a purchasing agent.

Give your product a clear field. If you want to lay charts or other material on his desk, brush his stuff out of the way. Don't ask permission; he might refuse. This ensures his undivided attention and probably not more than ten minutes of his time arranging his desk after you've gone—for good.

Be nonchalant. Introduce yourself by saying "I just happened to be in the neighborhood and thought I'd drop in." This jogs up your own ego even if the P.A. feels that he's of secondary importance.

Keep your identity a secret. It's all right to give your name and company name the first time you call, but after that, it's up to the P.A. to remember your name. He only has about 500 different salesmen calling on him in a year. If he can't remember names, he shouldn't be a purchasing agent. Don't ever, ever repeat your name again and again until he does remember it. It smacks of servility.

Never acknowledge an order. In many cases, the purchasing company does not receive acknowledgement of an order, nor is purchase order data shown on the supplier's invoice—with the result that the purchaser does not obtain his ten-day or thirty-day discount. This is really smart—the purchaser has to pay more than he intended to.

Say nothing about "Price at time of Delivery". Some purchasing agents are certainly fussy. One of them even suggested that suppliers have a rubber stamp made with the words, "Will be priced at time of delivery", to be applied to order acknowledgements. He said that on innumerable occasions, he had telephoned for a quotation, obtained it, ordered the goods, and had then received an invoice containing a higher price than that quoted. He should know that prices are going up—the darned fool!

Courtesy went out with the bustle. If you're offering a purchasing agent a cigar or cigarette, don't get up from your chair or reach out your arm. Pitch the cigar or cigarette across his desk. It loosens it up—makes a better smoke. Besides, it dramatizes the idea that you're hep to the 20th century way of doing business.

Hush-hush your new product. If you have a new product, don't bring a sample to show the purchasing agent. He might get interested. There is nothing that interests a P.A. more than the product right there on his desk. Leave your samples at the office. If you carry around a sample kit, it makes you look like a salesman. Keep all your prices and facts about your product on separate sheets of crumpled paper in different pockets. This makes a game out of selling. The P.A. can bet with himself whether he'll get the information or not.

# Imaginative Purchasing

**Ingenuity and knowledge of product pay big dividends in the purchasing operation.**

**Excessive costs are avoided, and waste is turned into profits.**

**Case studies of savings made in materials, equipment, and manufacturing methods.**

●

***By Thomas A. Dickinson***

OVER a period of months or years, the savings resulting from routine purchases on the part of any competent P.A. will total hundreds and perhaps thousands of dollars in even the smallest business organization. But, due to the fact that many top-management officials are dynamic men who are usually most impressed by spectacular achievements in a hurry, it seems safe to say that the merits of professional buying might still be unrecognized in many industries without occasional demonstrations of "imaginative purchasing".

Compared with routine buying, imaginative purchasing might therefore be described as the dramatic sort of thing that saves hundreds or thousands of dollars instead of dollars—and in a few days or weeks, rather than many months or several years. It is not necessarily the sort of accomplishment that can be anticipated only by a genius, although it does require the services of a P.A. who is energetic enough to familiarize himself with the operational details of a business, intelligent enough to perceive or recognize potential improvements, and with enough initiative to translate these ideas into recommendations and action.

### *Lighter Weight, Lower Cost*

For example, Russell Mooney of U. S. Porcelain Enamel Company found a way to produce better bathroom fixtures at a lower cost simply because he knew that many porcelain-enameled plumbing utilities could not be manufactured or installed with maximum efficiency. Why? Because they were fundamentally sand castings, which can't be mass-produced in a reasonably small amount of plant space or with the thin cross-sections required to minimize the weight of ferrous products. Lavatories, bathtubs, etc., have to be made from iron or steel alloys because other commercially-available metals would be damaged by the temperatures (averaging about 1500° F.) required to fuse opaque-glass or porcelain-enamel coatings thereon.

Accordingly, Mooney began looking for ferrous sheet or plate materials which could be porcelain enameled after fabrication with high-speed machine tools—and, consequently, "discovered" the Vitrenamel sheet products of Carnegie-Illinois Steel Corp. Result: Mooney's company is now using punch presses to manufacture vanity lavatory units which are more than 25% lower in cost and at least 60% lighter in weight.

There was some hesitancy about instituting the latter production program when management officials decided that, in addition to buying punch presses, they would probably need a complete new machine shop for the fabrication of punch press dies at a minimum cost. But here again, Mooney had an imaginative purchasing idea: Why not use standardized production dies? Doubts were expressed as to the value of this idea, in view of price quotations that had been received for custom-built dies from local machine shops; but Mooney soon procured catalogues and price lists which proved that, with no more than slight alterations in engineering design and procedures, he could buy standard production dies for every useful stamping contour at approximately 15% less than the cost of the special dies that could be



**Once-worthless local clays are blended by Pacific Clay Products Company with highly satisfactory results, avoiding heavy shipping expense on raw materials.**

made with the company's own machine-shop facilities.

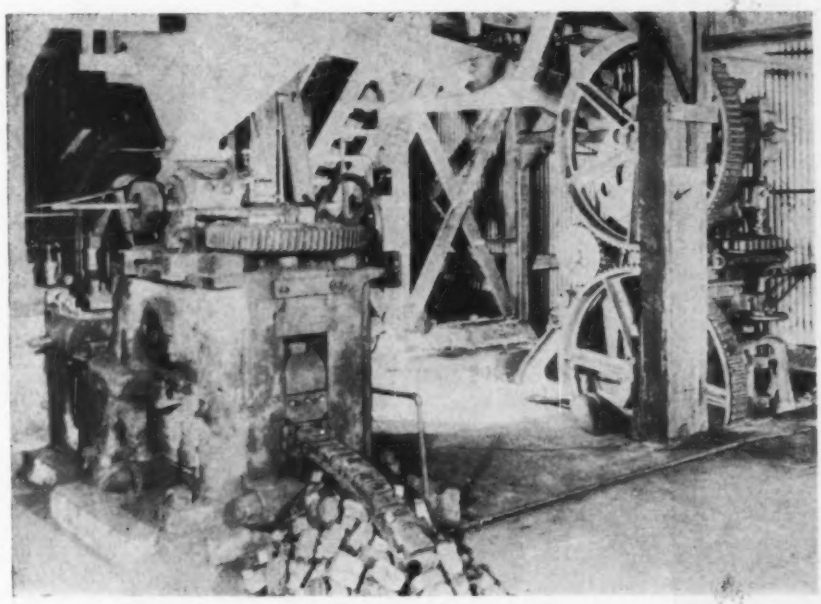
### *Equipment Is Adaptable*

Similarly, Walter Roberts of Glenwood Manufacturing Company perceived hidden merits in aircraft hydraulic equipment—which often could be purchased at the cost of scrap metal in the war-surplus auctions immediately following World War II. After going over the engineering aspects of his concept, he decided it would be possible to make a battery of small hydraulic presses which could be powered with a single pumping unit (like airplane wing flaps and landing-gear retractors) for the specialized molding of plywood. Eighteen of these presses are being used for current production work, and the equipment cost amounted to only about 10% of the money that would normally have been invested in such custom-built tooling.

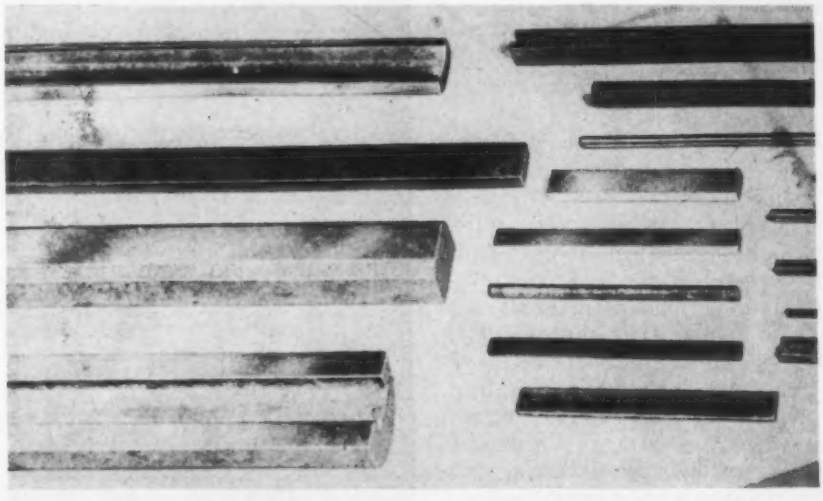
However, it is hardly fair to imply that imaginative purchasing is always a matter of buying materials or equipment at exceptionally low prices. On the contrary, tremendous savings have frequently been achieved by P.A.'s who merely found new or better uses for products which had been available at comparatively unvaried market prices for many years.

For instance, briquetting machines have been available to industrial concerns for at least thirty years; yet, because many plant executives haven't yet found time to familiarize themselves with such equipment, it seems safe to say that P.A.'s can go on discovering new uses for the briquetting process for a good many years to come, before all possibilities have been exhausted.

Briquetting is simply a method of reclaiming industrial waste materials—such as sawdust, blast-furnace carbon, scrap metals, etc.—by using hydraulic press equipment to compress the materials into brick-like "briquettes" which can be handled without difficulty and resold or reused.



Standard briquetting machinery has turned waste into a profitable by-product in the oil industry.



Magnetic moldings, made by using low-cost ferrous fillers in plastic, instead of embedded permanent magnets, cut costs by nearly one-half.

### *Profits from Coke Briquettes*

Ford Motor Company has been earning substantial profits from fuel briquettes for many years, yet oil refiners have only recently learned that their oil-coke by-products can be briquetted for the same purposes as farm waste materials. Oil coke is an unstable compound as it occurs in the manufacture of gasoline; and, because it disintegrates rapidly in normal circumstances, it was considered as one of those materials which must invariably be wasted until Emil Clement of Union Oil Company decided that the disintegration process might be halted by briquetting. Clement collaborated with engineers of Fernholtz Machinery Company in the development of his idea; and, consequently, American oil refineries are collecting an estimated $5,000,000 on the annual sale of coke briquettes at this writing.

### *New Products From Waste*

Well-conceived purchases of plastics have also permitted many savings by facilitating the reclamation of waste materials. For instance, at Ace Wood Products Company it was—as in many small woodshops—a general practice to burn sawdust before P.A. Earl King went to work. Sawdust has long been well-known as a valuable raw material for many industrial purposes, such as the manufacture of rayon; but, in most woodworking plants, accumulations of sawdust are too small to be shipped to rayon or similar processing mills. In addition to being anxious to demonstrate his abilities as a buyer, King was naturally opposed to the idea of wasting anything; so, in his spare time, he began investigating the uses that had been found for sawdust and learned that lumber mills in Oregon were

selling such materials as "fillers" to manufacturers of plastic products.

King's company evidently didn't produce enough sawdust to merit a filler-sales project, but the P.A. continued his investigation with the thought that his company might be able to fabricate wood-filled plastic materials. And he was right. By learning that sawdust-filled phenol-formaldehyde syrups are good casting compounds for use in inexpensive plaster molds, he has enabled his company to duplicate first-quality hardwood turnings at a comparatively negligible cost—thus increasing the firm's profits by more than $10,000 in a single year.

James Whiteside of Pacific Plastics Company had a similar, but perhaps more novel idea, after he was asked to get price quotations for permanent magnets which could be embedded in plastic moldings or casts for protection against corrosion.

### *Directing Technical Research*

"I didn't know a lot about magnetic materials at that time," Whiteside admits, "so I took a trip to the nearest public library in order to familiarize myself with the subject. Then, in the process of preparing a list of manufacturers and their products, I glanced through a technical report and was surprised to learn that a number of 'nonmetals' —such as ferrous oxides and their salts—could retain a permanent magnetic charge. This naturally caused me to wonder whether such materials couldn't be used as fillers which permit the permanent magnetization of plastics. So, after I returned to the plant, and prepared a form requesting price quotations from various magnet manufacturers, I asked one of our engineers to fix up a few castings with ferrous nonmetal fillers.

"The results weren't very satisfactory at first, I'm afraid; but, after we received the first price quotations for permanent magnets, we began to realize that our magnetic moldings were going to be very expensive if we couldn't make use of low-cost ferrous fillers. Then we went to work in earnest—trying out different methods of dispersing the fillers in various resin compounds—and in a matter of weeks the problem was solved. I can't discuss the details of our process at this time, but I can say that—if we had gone ahead with the original idea for embedding permanent magnets—our current production costs might be more than 75% higher than they are."



**Glenwood Manufacturing Company learned that plywood assemblies could be made in presses powered by surplus aircraft hydraulic equipment.**

★

### *Utilizing Local Materials*

Although the western states have possessed a substantial portion of America's ceramic industry for many years, it is a curious fact that western manufacturers have—until recently, at any rate—obtained most of their raw materials from clay deposits in eastern states. This practice was considered desirable, despite high shipping costs, because western clay deposits are relatively small and varied in composition.

Then Otto Natzler, Purchasing Agent for a Hollywood ceramic company, began wondering why different western clays couldn't be blended into raw materials with the desired physical and chemical properties. Tests were made, and veteran engineers were surprised to find that blended western clays could in many respects surpass the qualities of the best natural clays. This explains why Pacific Clay Products' Los Nietos plant now produces a better grade of sewer pipe at an unprecedentedly low cost—and, also, why purchasing personnel for many other western ceramic firms are now buying land with "worthless" clay deposits.

**Using a stamping press instead of sand castings speeded production, cut down weight, and lowered costs for U. S. Porcelain Enamel Co.**



# Who Profits from Purchasing?

**An address at the Thirtieth Anniversary Meeting of the Purchasing Agents Association of Tulsa, September 27, 1949**

•

***By Stuart F. Heinritz***

ANY thirtieth anniversary is an historical occasion. As such, it deserves attention and acknowledgment, not only in terms of the events and personalities that make up the historical fact, but in terms of an evaluation of accomplishment and significance.

No worth while association exists for its own sake. It is made up of many individuals having a common interest and a common purpose. Back of a Purchasing Agents Association are the men in purchasing work. They were with us before the idea of a group organization could possibly have taken effect; the Association is their handiwork. And back of the men in purchasing is the purchasing function itself, which is responsible for the purchasing job, thus giving rise to the community of interest that is basic in the Association.

### *Development of Purchasing*

Thirty years is a short enough time that the conditions and ideas then prevailing in respect to purchasing are still vivid in the memory of many who are still active in this field and who can look back with satisfaction to their own personal participation in the early, formative years of association work. The *act* of purchasing is, of course, as old as trade itself, for it is the complement to the act of selling; the one cannot take place without the other. But the *function* of purchasing did not come into existence until the growth of business forced a segregation of the buying responsibility from other existing functions of business as a specialized job. It was then that the first purchasing agents were appointed. This was a natural —indeed, inevitable—development, the working out of the classic economic law of the division of labor.

At this stage, the concept of purchasing was a rudimentary one. The buying job was strictly a matter of service to other departments of the organization that needed and used the materials. As the need arose, they told the purchasing agent what to buy, and he bought what he was told. Beyond the purely clerical chore of issuing orders and maintaining a record of purchases, the buyer had little opportunity to make a constructive contribution to the company's welfare. His independent contacts were limited to the suppliers' representatives who sought out the purchasing office. And since his work was judged entirely on the prices he paid for goods, his only outlet for initiative lay in shrewd negotiation and trading.

While all this seems very elementary today, it is well for us to remember that the three factors recognized in this simple scheme—efficient records and procedures, price consciousness, and skill in negotiation—are still fundamental to good purchasing. Business profited from specialized attention to these details. Waste and duplication were reduced, if not entirely eliminated. Standardization of requirements brought unexpected economies in inventory and manufacturing operations. Yet the full potential of purchasing's contribution was far from being recognized, either by management or by the purchasing agent himself, and without that recognition, the advantages could not be realized.

An active, intelligent mind applied to a job to be done, however small, soon tries to find out more about the job and better ways of accomplishing it. The *science* of purchasing may be said to have begun when purchasing men, here and there, made two important discoveries. One of these discoveries was that price is less important than ultimate cost. Many business men had been arguing this obvious truth for a long time, from the angle of sales, but relatively few of them had applied it to their own operations, particularly when it involved a conflict or compromise between cost of materials and engineering or production operations. When this proposition was applied to purchasing, the whole concept of buying responsibility was changed and broadened. It didn't automatically give the purchasing agent more authority, but management expected more of him and he had a new opportunity to exercise his initiative.

The second discovery was that price itself was not merely a matter of shopping and trading, as epitomized in the buyer's dealings with suppliers and their salesmen, but was even more fundamentally concerned with the changing economic and market conditions under which buying must be done. From this discovery, purchasing agents developed the principles of proper timing and scheduling of purchases—another basic element of good purchasing practice. Further, they studied the causes of market behavior and became adept—even pre-eminent—in forecasting economic trends upon which to base their buying schedules, for unlike the professional and theoretical forecasters, purchasing men have to back up their opinions with action, with cash on the line. Management came to look to the purchasing department for such counsel, too, and since this involved matters of policy as well, the broadening function of buying was raised for the first time in its development to something approaching management status.

### *Specialists in Cost*

The attention of the buyer was now focussed upon two basic factors of supply and cost—the supplier and the market. His function was still primarily one of service; he bought what the others said was needed. Of course, he had found out long since that in order to buy intelligently he must acquire as much information as possible about the things he was buying, the processes by which they are produced, and the uses to which they are applied. In the course of these studies, some progressive purchasing men came to the conclusion that their

greatest opportunity for service had not yet been explored. They must turn their attention inward, examine their own companies' requirements and, instead of accepting the requisition, raise the question: Are we asking for the right thing?

This is the third stage in the development of the purchasing function, the stage in which we find ourselves today. This is reaching far beyond the simple responsibility in which the purchasing job had its origin, and in a sense it is encroaching upon prerogatives that were by general consent reserved to other departments in the earlier plan. But it is based on the sound economics of cost, in recognizing that the lasting savings are made—not only by securing a favorable price in relation to the current market, but by specifying or engineering out of the purchased product the unnecessary costs that are intrinsic in materials and in vendors' manufacturing methods. When these factors are held to the minimum, the selection of a proper supplier and the negotiation of a proper price can proceed on a scientific basis, the competition of efficiency and know-how in place of the competition of shrewd bargaining and flexible margins that are full of dangerous pitfalls for buyer and seller alike.

Why is this a logical responsibility for the buyer? Because, more then anyone else in the organization, he is aware of costs. He has access, in the course of his daily work, to the dramatic comparison of alternative materials and methods, also in terms of costs. He knows what suppliers are doing, and what they are equipped to do. And he sees the operation as a whole—everything and every added cost that goes into a product—more clearly, more completely, and more objectively than the person whose responsibility centers around any single phase.

Where this policy has been accepted and adopted—and it is a definite part of the purchasing program in scores of leading companies today—management has been sold on the idea through no theoretical process of reasoning. It has won its place in modern purchasing practice by virtue of spectacular savings from this unexpected source, savings that pay off over and over again in mass production; because in the new era of competition, management itself has of necessity become exceedingly cost-conscious on its own account; and because management itself has newly discovered what its cost sheets could have revealed thirty years ago—that in sheer volume of dollars involved, purchase expenditures generally outweigh the cost of labor and the cost of taxes and all other cost factors that go to make up the manufacturing dollar. The greatest opportunity for savings lies in that phase where the greatest number of dollars go. So the function of purchasing has grown to the point where the act of buying, which was once the sum total of purchasing responsibility, has become a mere detail in a larger and more important function, which might aptly be termed the management of materials.

### *Growing With the Job*

So much for the function itself and how it has changed over the years. What of the men in purchasing? They have changed, too. The "old timer" in purchasing—in the sense of the man who clings to the old-fashioned concept of his job and old-fashioned methods of buying—doesn't rate very high in the purchasing picture today. In fact, he doesn't last long on the job. Yet many of the familiar faces of thirty years ago are still with us today, still active in purchasing and still among the leaders. The qualifications for a new man seeking a career in purchasing are far more exacting than they were three decades ago, for management is expecting and demanding a great deal more of its purchasing men. But many of those who were among the pioneers in the early years of a new profession are still pioneering as the frontier moves on to broader horizons. And the answer is not hard to find.

Purchasing men have not only grown with the job; they have made the job what it is today. They have themselves been responsible for the progress we have briefly reviewed. Purchasing has grown because alert men in purchasing have recognized the opportunities for giving a greater and more effective measure of service. They have reached out for a fuller opportunity to do a complete purchasing job. And it has been an uphill struggle most of the way; not one of these advances has been handed to purchasing on a silver platter. Purchasing men have attained their present status and stature because they have encouraged management to expect more of its purchasing departments and have backed this up by equipping themselves to meet the larger responsibility. In the truest sense of the word, purchasing is a self-made profession.

The young man who studies management in a modern college of business administration and learns about the purchasing department as an accepted and influential factor in the normal organization, or who takes a position in an established purchasing department with a competent and respected executive at its head, may find it difficult to believe that this has not always been so. Yet only a few years ago he would have found a very different condition prevailing. The chances are that he would have found that selfsame executive struggling for even the most nominal recognition, perhaps even pitied by his colleagues for working down a blind alley with no possible future. It is very certain that he would have found purchasing given scant mention in the management curriculum, and only the sketchiest sort of purchasing literature on the library shelves for his guidance. If he were to do a little research on the subject, it is more than likely he would find the purchasing agent himself responsible for the present standing of his department, and to a large measure responsible for the educational and training facilities available in his field today.

Purchasing is a logically accepted part of management today, but purchasing progress and development have not stemmed from management reasoning. Nor is purchasing prestige an accident of wartime necessity, as is sometimes claimed, though the problems of wartime procurement did emphasize the fundamental importance of the function in two world conflicts and gave dramatic impetus to purchasing progress.

Purchasing has achieved its present position by sheer accomplishment, and by the practical demonstration of its essential place and high potential value in the profitable conduct of industry. Purchasing men have made their own place in industry by holding steadfastly to the vision of purchasing service and by equipping themselves to accept the larger responsibilities that have made that vision a reality. At every step of the way, they have themselves provided the driving force and the facilities that have made this advancement possible.

### *Role of Association*

One of these facilities is the Association. It is no mere coincidence that Association history traces the same pattern as professional progress, for the two are inseparable.

They have come hand in hand along the way. The Association, born of the recognition of mutual interests and mutual problems, has been the means by which objectives have been clarified, standards maintained at a high level, experience shared, leadership made effective, and collective progress made possible.

Every Association program involves an element of self-interest, an ambition to have its members—individually and collectively—receive the recognition which it conceives to be their due. The Purchasing Agents Association is unique in that it has never in all its history placed lobbying for prestige upon its agenda. It has held firmly to the position that recognition must be earned by service, and that prestige is the by-product of doing a better job. Perhaps, upon the surface, professional progress might have been accelerated by a more aggressive self-seeking approach, but built on the firm foundation of service and self-improvement, the soundness of the present policy has been amply justified and its impact immeasureably increased. Service has been the keynote. Service to help the individual member, and through him, service to the nation's industry. This policy was strikingly exemplified in voluntary service to the national government at the time when procurement was the nation's foremost problem in the hour of emergency.

In recent years, a great deal of emphasis has been placed on the Association's program of education. In a very real sense, the whole Association from the start has been one of education for better buying. The present project is a project of putting it into better organized and more comprehensive form, to reach the beginner in purchasing, the advanced practitioner, and the seeker for specific economic and commodity knowledge, and to adapt the newer technique of seminar and visual aids to training in this particular field of interest.

Thirty years ago, the Association was still in its infancy. It had to go through the kindergarten stage. Many of the veteran members will recall national conventions when a whole session would be devoted to earnest and impassioned debate on a standardized invoice or purchase order form, or the solemn affirmation of common honesty in regard to commercial bribery. Early convention committies were gratified when they could persuade a single speaker of national reputation to consent to appear upon the program, and in at least one instance the featured speaker sent his last-minute cancellation, without apology, leaving the committee flat. Yes, even in those days, purchasing agents had to help themselves. Perhaps it was all for the best. Today, there is no man so high in industry, or in government, or in technical research, or in education, that he is not honored to be accorded a place upon the program. And they come, not to talk down to the lowly buyer, but to enlist the cooperation and aid of a powerful functional factor in industry to effectuate policies of national economic import.

Thirty years ago, a score of scattered local groups, sparsely covering the major cities, comprised the total national organization. Today there is no industrial center of any importance in any section of the country, where the Association is not represented by an active local group. There is scarcely an industry of any significant size or note that is not counted in the membership. Geographically, the scope of the Association has extended to cover Canada to the north, Mexico to the south, and Hawaii in the Pacific. A sister association, inspired by this example, counts some 2,000 members in 22 chapters in the British isles.

### *Who Profits?*

It would be academic to ask an Association audience whether this activity and this program is worth while. Industry has a strict yardstick of dollar value, and expects to get value. Twelve thousand busy men do not give up their time for monthly meetings unless they believe that this time is well spent.

We may ask who profits from Association work, and how.

First, every business enterprise, whether or not it is identified with the Association, has the tangible benefit of accepted good purchasing methods as a standard part of business practice; of proved principles governing the sound expenditure of his greatest single item of cost; of operating in an economy where purchasing has maintained honest competition; of a high standard of business relationships between buyers and sellers, which the purchasing profession has done its share to establish. These are things we take for granted, but they did not come to pass of themselves. They are a part of the Association's contributions to management knowledge and economic health.

And every man in purchasing, whether or not he is a member of the Association, enjoys the prestige which accrues to the purchasing position and the increased opportunity of personal business advancement because of the standing which the Association has earned for its function. And he has access to purchasing information and training facilities which the Association was instrumental in establishing.

These are general benefits which anyone can enjoy and use and profit from. We think of them as a permanent contribution to management science and economic principle. But we who know how hardly they have been attained know also that they are not static. We know how quickly they could deteriorate if purchasing did not have a collective, authoritative policy and voice.

But while these benefits are generally available, they are of far greater benefit to the man and the company who participate actively in shaping professional progress and destiny through the medium of the Association. There are hitch-hikers in every walk of life, and purchasing is no exception. But there is no substitute for the personal contacts it affords, the constant touch upon the pulse of purchasing opinion, the first-hand first-minute knowledge of trends, the month-by-month interchange of experience, the purposeful direction of purchasing progress. There is a morale in belonging that no camp-follower can ever experience.

In hundreds of purchasing offices throughout the country, the insignia of the Association hangs upon the wall as the proud badge of a professionally minded purchasing executive. I have been even more impressed by the number of companies that have recently placed that insignia upon their purchase orders, letterheads, reception room booklets, and other communications. It isn't there for decoration, but because that affiliation means something and commands respect.

An active Purchasing Agents Association in a community is evidence of an alert and progressive industry that is not likely to get into a rut of complacency when times are booming or be caught unprepared when the economic tide turns the other way. It is the sign of forward looking management, that wants the best informed service for its own sake and believes in working for the common good.

The first thirty years are but the start. The best is yet to be.

# The Dollar and the Pound

**Britain faces reality in devaluation of the pound sterling.**

**World trade balances depend on relative currency values.**

**Forecast of probable effects on markets for major materials and products.**

●

***By A. N. Wecksler***

FOR more than a century, the British pound has been the hallmark of world currencies—the yardstick of world commodity values. Buyers on world markets have had to adapt their thinking to the odd system of pounds, shillings and pence—whether buying textiles from the British Isles, rubber from Malaya, or jute from India.

The war changed conditions in a physical sense. Had she lost the war, Britain would have ceased to exist as an important nation; but the cost of winning it has been so great that the British can no longer afford to be the arbiter of world values, nor is the pound accepted any longer as the yardstick of prices on the world's markets.

The value of the British pound has been tested on trading markets that have no regard for tradition, and little faith in promises of long-term future delivery. These markets have turned to the United States as offering the only great source of current delivery of food, machinery and textiles.

Result is that the dollar has now assumed the position which the pound sterling has held for so long, and both commodities and pounds sterling are now priced in terms of their dollar value.

### *Realistic Readjustment*

Recent devaluation of the British pound—and with it, the devaluation of the currencies of other nations—was in recognition of conditions as they have existed for more than a year. Where there has been a free exercise of judgment on values, world markets had been discounting the officially quoted prices of the British pound—not by as much as 30% (the rate at which the pound was devalued), but nevertheless lower than the official quotations.

Result has been that sellers of staple commodities throughout the world would not sell at market prices for pounds sterling. A universal clamor for dollars developed because Britain has not been able to deliver manufactured goods of a quality and type, nor at a price in pounds, remotely competitive to the products which American manufacturers are offering.

Britain has sought to remedy this condition in several ways. One effort was to organize a self-sufficient trading area, with Britain and the pound sterling as its hub, which would bypass the American dollar by restricting its trade with the United States to a minimum, and seeking to obtain needed products from U. S. as a gift or loan.

Another effort has been directed at increasing the productivity of British industry, so that its products would be more competitive with those coming from American plants.

The last course was to accept the judgment of world traders on free markets that the pound was not worth the then officially quoted rate, and to set a new value on it.

This latter course was taken, and all countries in the Sterling area had to follow suit in some degree.

### *Immediate Effects*

Immediate effect of devaluation in terms of British trade has been to permit price reduction in some of their export goods.

Also at the outset, devaluation means somewhat of a reduction in wage costs to British manufacturers selling on the U. S. market. These manufacturers will be selling for dollars, and paying wages to their British labor in pounds. This is not likely to be an important economic factor, as a clamor has already been raised in Britain for wage increases.

At the same time, some price cuts in British manufactured goods can be anticipated, whether they are traceable to currency manipulation or improvement in productivity.

Another immediate effect of the devaluation has been to increase the cost of U. S. products to the British consumers and to consumers in the other nations which have followed suit in devaluation.

Buying products and commodities from countries with devalued currencies will now be a little cheaper, but selling to these countries will be more difficult. Presumably this will serve to correct the balance of trade which has been depleting British dollar reserves.

There is, moreover, a catch to this. It has been becoming increasingly difficult to sell U. S. products in Sterling area countries; at the same time, devaluation of the pound does not necessarily mean that basic commodities from the Sterling areas will come down in price.

### *Controls Will Continue*

The devaluation of the pound, while primarily in recognition that free markets had already discounted the pound sterling, does not restore a free market on commodities from the British area. The British and allied economies remain controlled, and where it is advantageous for the British to reduce prices of their products and commodities to the U. S. buyer, there will be a reduction.

However, where a reduction in a commodity price does not earn Britain a greater amount of dollars, a price reduction to the American buyer is not likely, merely because the pound has been devalued.




Further, the devaluation of the foreign currencies will not tend to open up markets for U. S. exports on a competitive basis. The outlook is for more control—not less.

These are the broad outlines of the effect of British pound devaluation. A sudden shift is not likely in the patterns of trade between the United States and the nations which have devalued their currencies. Considerable changes in price are not likely, except that on a controlled basis, Britain and countries in the Sterling area will seek to enlarge their markets in the United States, and also to reduce their consumption of U. S. produced goods.

In terms of specific commodities of major importance to U. S. buyers, devaluation is likely to create the following reaction:

Devaluation is not likely to have a noticeable effect on machinery. In the past, the U. S. has been a purchaser only of specialized machinery, inasmuch as foreign countries are not in a competitive position either on quality, price, or delivery dates, on standard machines.

The U.K. has been seeking to penetrate the U. S. market with automotive equipment and tractors, but this effort has been only moderately successful, mainly because the type of car manufactured in Europe does not appeal to the buying public in this country, regardless of price.

The British sought to get a portion of the U. S. market for tractors, and during the postwar shortage in this country, they were successful in selling to American farmers between 15,000 and 20,000 tractors of a particular type. A factory has been established in Detroit to make the tractors which found acceptance on the American market, and the British sales have tended to dry up.

As for sales of U. S. machinery to Europe, devaluation is likely to accelerate a trend which has been developing for the last 12 months. In high speed production automatic equipment, where U. S. products have no competition, demand will not be affected by devaluation of currency; but on automobiles, tractors and farm machinery, where British and European producers are turning out a good product, the devaluation will tend to place U. S. sellers at a disadvantage.

### *Chemicals*

No immediate change in the trade pattern for chemicals between the U. S. and Britain is anticipated. Both the U. S. and the United Kingdom are major producers of a large number of chemicals, and where the two countries produce the same products, it is unlikely that the British exports to the United States can effectively compete with American production.

Another reason why no important change is anticipated in the trade pattern for chemicals is that with few exceptions, exchange of chemicals between Britain and the U. S. is of an essential nature, and not greatly affected by price.

A decrease in chemical exports from the U.S. to the U.K. is anticipated, but the drop will be due far more to a reduction in ECA assistance and to the rebuilding of the British chemical industry.

Devaluation may give British chemical producers an advantage in selling their products on foreign markets other than the U.S., and it may be necessary for U.S. producers to lower their prices in these areas if they wish to maintain their volume of sales.

### *Metals*

No immediate appreciable effect is anticipated in U.S. exports and imports of steel, except that there may be some slight increase in imports of Belgian steel. In nonferrous metals, the devaluation may result in a slight decrease in U.S. exports and some increase in our imports as foreign prices fall in relation to domestic prices.

### *Fats and Oils*

Imports of certain items such as olive oil, sperm whale oil, fish oils, palm oil, palm kernels and palm kernel oil, which come from Europe and European possessions, are expected to increase.

### *Petroleum*

Currency devaluation will, in the long run, accelerate the present trend of purchases by foreign consumers away from oil sold at a dollar price to oil sold at a pound price. Current U.S. exports of petroleum products are of a specialty nature, and are not likely to be affected.

### *Pulp and Paper*

U. S. exports of pulp and paper to the United Kingdom and to the other affected countries will decline in the immediate future, because devaluation will give a competitive price advantage to other suppliers, particularly Sweden, Norway, Finland and Canada.

Canadian and Scandinavian suppliers will be able to compete on the U.S. market to a greater extent, especially where U.S. production is in a high price area.

### *Wool, Textiles and Hides*

Devaluation will improve the U.S. buyer's price position in purchase of raw wool from the Commonwealth countries, purchase of wool textiles from Britain, and purchase of hides and skins.

# PRECISION CASTINGS by the Investment Process

● By Lee A. Cuson
Precision Metalsmiths, Inc.
Cleveland, Ohio

GREAT strides have recently been made in the technique of precision casting by the investment or "lost wax" method. Castings have been produced from such metals as brass, aluminum, beryllium, copper, nickel, magnesium, monel, and steels of various specifications, including high-speed and stainless.

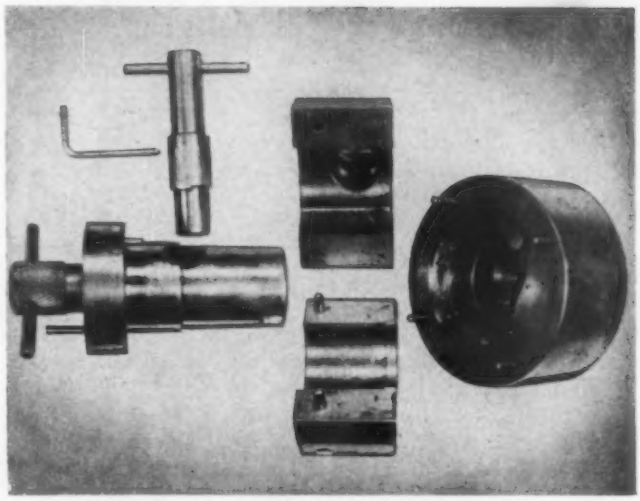
Dimensions of plus or minus .002" are commonplace. Occasionally dimensions are held to .0005" depending on the design complications of the part to be cast. Parts with holes as small as .033" (No. 66 drill size) are being cast in production quantities.

One of the great advantages lies in the elimination of machining costs, with savings running as high as seven to one, with greatly accelerated production. Die, jig, and fixture costs are also reduced or eliminated.

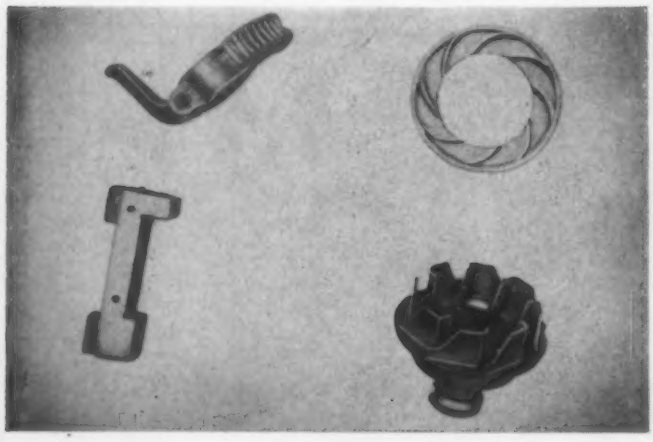
Because of the heat control in this process, great strength can be attained. In tests made on a lever cast from beryllium copper, as compared with a steel forging, the casting did not crack or break under fatigue tests, while the forging crystallized and cracked.

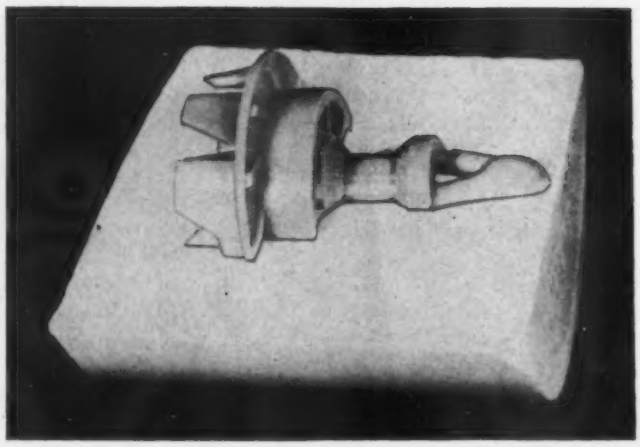
Illustrations at right, from top to bottom, show the mold from which the wax "pattern" is produced; wax patterns gated and mounted on a sprue, sometimes referred to as a "Christmas tree"; and the plaster-like investment poured around the wax. The assembly is heated in an oven at 1800 to set the investment and melt out the wax, leaving a perfect cavity into which the molten metal is poured.

The illustration below shows jet aircraft components, typical of the intricate shapes that are possible with this process.











## Keep them from getting

# Lost in the Crowd

● **By Dr. Donald A. Laird**

**As business and cities have grown, so has this problem in human relations.**

**Results are better when people work with the boss rather than for him.**

**Practical psychology applied to problems of departmental supervision.**

CHARLES SCHWAB, a backwoods Pennsylvania boy, went to work at nineteen driving stakes in a steel mill. During lunch hours he visited other departments in the mill, seeing what they did and getting acquainted with workers.

When he was forty years old, this one-time farm boy's salary was a million dollars a year—the highest paid man of his day. His getting acquainted with people helped him earn it.

As steel president he did not push buttons to summon people into his office. He grabbed his hat and went to see the man right on the job. On the way he paused to visit briefly with a dozen workers.

"Haven't seen you before, you must be a new man. I'm Charlie, used to work in this department. Where do you live? How many children have you? Here's a cigar—smoke it when you get home tonight; they won't let us smoke in the mill."

And the new employee would be flabbergasted to learn later that the tall fellow who wanted to know about his children was the company president. He didn't let workers feel overlooked and left out of things.

Schwab often said, "I do not want men working *for* me, I want them to work *with* me." By getting acquainted with them he helped them feel they were working with him, not for some stranger or absentee owner.

Out in Oregon, after Anne Shofner's husband died, she tried to run their small foundry. She took correspondence courses in metallurgy. A course in management gave her hints about building human relations in business. Then she used her motherly nature to generate the harmony of a big family among the rugged foundry laborers. She got acquainted with every one of them as individuals.

She had big brass cuspidors in her office for the men, and she cooked big pots of baked beans in the core ovens—often sharing beans with the night shift at midnight. It is easy to understand how she was able to start a second foundry, and then a new iron and steel works. Her employees were not working for an intangible company or for a pay check, they were working for a person they knew and who knew them and took an interest in them as persons.

Large concerns have large problems in human relations because

many individuals get lost in the crowd. Too many workers feel that no one cares for them. The bigger the business, the greater this danger —but often happens in the small business where the boss is too busy to notice individuals.

### *Children Are Like Adults*

Young children do many things to win attention. They ask questions, show-off, and make nuisances of themselves unless they are given attention. Such was the case of the three-year-old girl who told the visiting minister she could undress herself, but was told to go to the next room and be quiet. A few minutes later the door opened and the child said, "See—I can undreth myself!"

Adults, like children, want to be noticed, although adults try to conceal their craving for attention. The desire to be noticed is still there, and for pleasant human relationships it is imperative to notice and be noticed. When an adult feels ignored he will either (1) do odd things to get attention, or (2) direct hostility toward the person who refuses to notice him.

An amusing example of the first was the 250-pound man in a chemical works who had a lonesome job in a remote corner of the plant. The only time he saw the boss was on pay day. About once a month he took a day off, and came to the works late in the forenoon, dressed in white flannel trousers, blue coat, derby hat, and swinging a cane. He strutted through the plant like a visiting director.

"He must be off his nut," the manager told the employment office. But the be-derbied gauge-man was no more off his nut than the clerk who talks too loudly, or the office girl who comes to work dressed for a princely ball, or the college man who uses words no one can understand—they are all doing something to win attention.

Examples of hostility which may arise when people are not given the attention they crave are the employee who makes fun of the boss behind his back, or, in extreme situations, writes anonymous notes to the boss' wife, or tries to organize some group opposition to the boss.

Such conduct seems childish. Yet it is more common than suspected, because adults are much like children. The problem of improving human relations is much simpler if one looks upon adults as big children. The thirty-year-old needs attention just as much as the three-year-old.

The child wants notice from his parents especially. When a child starts to school, the teacher shares some of the authority formerly associated with parents, so school children want to be noticed especially by their teachers.

When the individual goes to work, the boss becomes the person with authority and consequently is the one from whom attention is especially wanted. Thus it goes through life: while people want to be noticed, they want most of all to be noticed by those in authority.

The teacher, and later the boss, occupy sensitive points in our mental lives. Psychologically, the teacher and boss are parent surrogates, substitutes for parents. Any individual is especially sensitive to lack of attention, or signs of favoritism toward others, from these surrogates.

A New Jersey research engineer's marriage was nearly broken up before he learned this. He was an absent-minded sort, walking around in a mist of new ideas and seldom noticing people. One afternoon a typist in his office received word that her brother had been rushed to the hospital. The engineer was leaving to check an experimental installation near the hospital, so he thoughtfully offered to take the typist to see her injured brother.

When he returned home that evening his wife greeted him with a jealous tirade. She had packed her clothes and was going to her parents because an anonymous telephone call had accused her husband of taking the prettiest office girl for a ride in the country. Luckily the engineer learns fast—he now gives people more attention, including his wife.

### *Make the "Howdy" Rounds*

The higher the position, the fewer people the executive works with directly. Top executives seldom work directly through more than seven department heads. Their person-to-person acquaintances are usually more extensive outside the company than inside. This puts psychological distance between higher executives and the rank and file, a situation unfavorable for good human relations inside the business.

On the other hand, supervisors and foremen work directly not with seven people, but more likely seventeen or seventy. These immediate supervisors (surrogates) are usually so beset with troubles that they seldom make the opportunity to notice the employees as individuals—until something is done wrong. But it has been shown time and time again that the supervisor will have fewer troubles, and less will go wrong, if he makes a definite effort to notice the individual employees.

Some 20,000 supervisors and executives of General Motors Corp., for instance, have been given training by Ralph L. Lee on "Man to Man Relations on the Job." At more than a dozen of their plants conferences and individual interviews have been held to stimulate these surrogates to make the "Howdy" rounds —to visit each worker, on the job, for two minutes, just to say "Howdy, how're things doing!"—to give each individual notice, systematically—to get acquainted and keep acquainted. These brief visits with each worker avoid signs of favoritism.

The boss who is too busy to notice individuals when things are going smoothly, is not establishing relations so they will pull with him when the rough going starts.

The strong silent man who knows the business from A to Izzard often makes the poorest boss because he fears his dignity will suffer if he notices people. The silent treatment is a prison form of punishment.

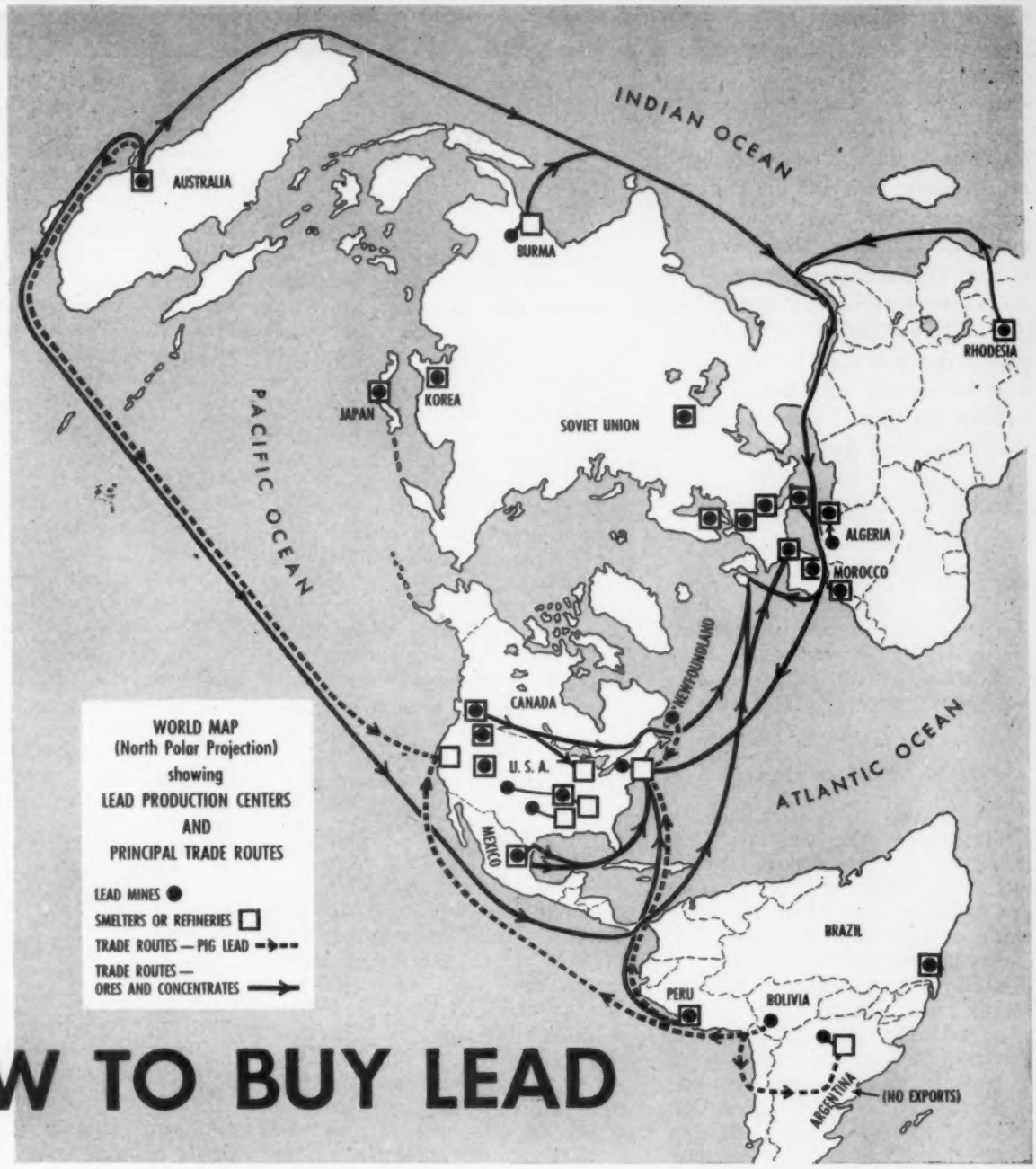
### *Mechanical Attempts to Give Individual Notice*

Editors of company newspapers try to mention the names of as many individuals as possible. The intention is good, but unless the paper is as large as a telephone directory, most employees will still be overlooked and remain charter members of the Lost Battalion of Unnoticed Men and Women. Occasional newspaper notice is not a substitute for flesh-and-blood attention; type is impersonal.

"It is not enough to recognize the teamwork of our men and women in the plant newspaper, or from the platform," says Fred C. Crawford, president of Thompson Products, Inc. "We must take time for the friendly 'Hello' and personal chat out on the production line. That's the best way to know our people and have them know us."

Company teams and parties help some, but often the people most in need of individual notice stay in the background and don't get noticed. The boss should make an effort to contact these wallflowers who feel unwanted and in the way, to avoid an inevitable impression of favoritism.

(*Please turn to page* 314)




# HOW TO BUY LEAD

**By K. W. Green**
Purchasing Agent
The Philadelphia Storage Battery Co.
Philadelphia

When a commodity becomes an item of major procurement by the purchasing department, it is the duty of the buyer to learn all he possibly can about that commodity. Thus armed, the buyer will have provided himself with a most effective tool—knowledge of product. It is equally as important for the buyer to "know his product" as for the salesman to know the product he sells.

Lead, a metal critically short in world supply, presents a real challenge to the buyer who must procure quantities of it. Procurement, in the sense of seeking the supply, is probably more important than the actual act of purchase.

### *What Is Lead?*

Lead is one of the oldest metals known to man. In the British Museum there is preserved a leaden image found in the Temple of Osiris and dating back to about 3000 B.C. The Chinese used lead money about 2000 B.C. The Romans used lead pipes to conduct water. This water pipe was made in 10-foot lengths and in a number of sizes. Some of these pipes have been dug up in modern times and found in an excellent state of preservation. Many magnificent buildings erected in the 15th and 16th centuries still stand under their original lead roofs.

Lead is the heaviest and, when refined, the softest of the common metals. It is bluish gray in color, malleable but not ductile, and has

**Mr. Green's article is one of the three prize winning papers in the "How to Buy" contest sponsored by the Committee on Education, National Association of Purchasing Agents. The awards were announced at the 1949 convention in Chicago, and the prize papers are published in this magazine by special arrangement with N.A.P.A. Mr. Green is a member of the Philadelphia Association.**

low tenacity. The metal is easy to extrude, roll, and fabricate. Its physical characteristics are perhaps better understood by comparing them with those of the other common metals. A comparison is shown in Table I.

### *How Does Lead Occur?*

Lead ranks 23rd in abundance among the elements making up the earth's crust. Actually, it amounts to only 0.002%, but concentrations are found in most countries of the world to make it profitable to mine and produce the metal.

Lead occurs in nature usually associated with other metals, notably silver and zinc. The lead may be in the form of a sulphide, sulphate, or carbonate; the sulphide (galena) being the most common. Galena ore will vary in percentage of lead content and, until recent years, mining was focussed on ores assaying 6 to 8% lead. At today's price it is profitable to work ores as low as 2% lead.

Obviously, with ore containing only small percentages of lead, it is necessary to "concentrate" the initial product in order to cut down bulk, save transportation costs, and make for easy smelting. This concentration or removal of rock and earth (gangue) is usually done near the mines.

The concentration of galena is usually done by the flotation process. The ore is crushed into fine particles, then mixed with four times as much water, and the mass agitated in a tank to which a fraction of a percent of pine oil has been added. This agitation produces a froth containing most of the metallic constituents of the ore, which forms on the top and can be separated from the worthless gangue.

Lead concentrates will normally contain from 40 to 60% lead sulphide. In the next operation, the sulphide is roasted to remove most of the sulphur and to agglomerate the "fines" so they can be charged into a blast furnace.

The lead blast furnace is similar to the iron blast furnace, except that its shaft is much lower in height. A mixture of roasted concentrates, now in lump form, plus coke and some suitable flux, is charged into the top of the furnace. A blast of heated air is injected into the lower part of the furnace to provide large quantities of oxygen, thereby hastening combustion and the formation of metallic oxides. As the molten mixture moves to the bottom or hearth of the furnace the oxides are reduced to metal and sink to the bottom of the hearth, from which they are tapped. The remaining waste product or slag is tapped periodically at a higher level hole.

The metal product of the blast furnace is known as base bullion or lead bullion, and it contains small amounts of silver, zinc, copper, antimony, and other impurities which must be removed in whole or in part by refining to produce a commercial lead.

There are several processes of lead refining, which are not described here except to say that they are used to selectively remove such undesirable impurities as will make the remainder conform to the grade of lead wanted.

The commercial grades of lead obtained from the refining process may be classified as follows:

1. Corroding lead. 99.94% Pb.
2. Chemical lead. 99.90% Pb. Used for many years to describe undesilverized lead produced from southeastern Missouri ores.
3. Acid lead. Made by adding copper to fully refined lead.
4. Common desilverized lead. 99.73-99.85% Pb.
5. Soft undesilverized lead. 99.93% Pb.

(Caution: The grading is determined by the type and percentages of impurities, not the percentage of lead remaining.)

Lead is chosen where one or more of the following properties are desired:

**Table I**

**COMPARATIVE PROPERTIES OF COMMON METALS**

| PROPERTIES | LEAD | ZINC | COPPER | ALUMINUM | CAST IRON |
|---|---|---|---|---|---|
| Atomic Weight | 207.2 | 65.38 | 63.57 | 26.97 | 55.85 |
| Density, #/cu. ft. | 709 | 440 | 560 | 170 | 450 |
| Specific Gravity | 11.34 | 7.13 | 8.94 | 2.70 | 7.15 |
| Melting Point-deg. F. | 621 | 787 | 1981 | 1220 | 2804 |
| Boiling Point-deg. F. | 3137. | 1663 | 4703 | 3740 | 5432 |
| Hardness (Mohs' Scale) | 1.5 | 2.5 | 3 | 2.9 | 4.5 |
| Relative Thermal Conductivity | .088 | .34 | 1. | .552 | .117 |
| Relative Electrical Resistivity | 12.4 | 3.68 | 1. | 1.59 | 6. |

A. Resistance to sulphuric acid, sulphurous compounds, and other corrosive chemicals.

B. Resistance to atmospheric, underground, and salt water corrosion.

C. Improvement to detonating characteristics of gasoline in internal combustion engines.

D. Ease of alloying with other metals.

E. High specific gravity.

F. High reclamation value.

G. Excellent anti-friction qualities.

H. Resistance to penetration by short wave length radiations.

I. Softness and workability.

J. Low melting point combined with high boiling point.

***How Does My Company Use Lead?***

Here is where the buyer applies the specialized knowledge of his company's requirements to choice or rejection of the quality or grade of lead offered to him.

If one were buying lead for tetraethyl compounds, he would choose chemical grade lead or any of the other grades yielding a limited percentage of bismuth, which is a harmful impurity. He would know the chemical processing given this lead before it is a solution capable of mixing with gasoline.

If one's interest were in cable sheathing, he would seek a chemical lead or perhaps a low alloy containing 1% antimony or 0.03% calcium. His knowledge would encompass the process of extrusion used to provide a continuous sheath free from joining marks or oxidized impurities.

The buyer for storage battery lead might have more latitude in some respects than those buying for other services. He would buy an antimonial lead of fixed percentage for the grids of his plates. The paste in the plates, which becomes the active material, is made by oxides of lead, in which he would exercise the greatest caution against impurities. The strips of lead on top of the battery, which join the cells together in an electrical circuit, might be made from any common lead available.

Type metals are usually alloys of lead, tin, and antimony. The latter two are added in varying amounts to provide latitude in hardness and wear for different classes of type —electrotype, linotype, monotype, stereotype, and foundry type. Since type metals, other than foundry type, are remelted and recast repeatedly, there is always the danger of contamination by unwanted metals. This class of service usually draws on secondary lead (lead refined by processing) which is seldom as pure as the virgin constituent metals. Consequently it behooves the buyer to carefully watch the chemical analysis of the metal he buys so that it contains his exact specification for percentages of alloys, and that it does not contain excessive amounts of the impurities he must avoid.

In the foregoing paragraphs, it is meant to convey this important idea the buyer must be completely familiar with his company's processes, the manufacturing difficulties when variations from standard material are procured and the effect that sub-standard material has on the value of the end product. He must be constantly alert to provide that material which will circumvent these problems. *The foundation stone in the manufacture of a superior product is the procurement of the proper raw material at a satisfactory price.*

**Table II**

**U. S. LEAD BALANCE SHEET**

(Thousand Tons)

| | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 |
|---|---|---|---|---|---|---|
| STOCKS—JANUARY 1 | | | | | | |
| Producers— | | | | | | |
| Base Bullion | 23.0 | 27.8 | 25.1 | 28.6 | 29.4 | 29.4 |
| Prim. Refined | 31.0 | 31.0 | 18.4 | 40.3 | 41.1 | 13.9 |
| Second. Refined | 9.9 | 7.1 | 4.8 | 10.7 | 7.4 | 7.9 |
| Scrap | 14.4 | 16.9 | 16.7 | 25.5 | 33.6 | 18.2 |
| Consumers— | | | | | | |
| Refined Soft | 81.6 | 115.1 | 86.9 | 102.9 | 41.9 | 55.9 |
| Government | 248.4 | 173.9 | 90.5 | 68.7 | 36.1 | 2.1 |
| Total Stocks | 408.3 | 371.8 | 242.4 | 276.7 | 189.5 | 127.4 |
| PRODUCTION | | | | | | 8 Mo. |
| Primary Sources— | | | | | | |
| Soft | 469.6 | 464.8 | 443.6 | 338.2 | 455.0 | 362.0 |
| Hard | 27.3 | 18.8 | 10.0 | 13.3 | 40.6* | |
| Secondary Sources— | | | | | | |
| Soft | 58.3 | 55.0 | 61.1 | 73.7 | | |
| Antimon. | 176.9 | 180.8 | 194.1 | 193.7 | 514.0* | 320.0* |
| Other | 106.8 | 95.6 | 107.8 | 125.4 | | |
| Total Production | 838.9 | 815.0 | 816.6 | 744.3 | 1009.6 | 682.0* |
| FOREIGN COMMERCE | | | | | | 8 Mo. |
| Imports | 248.9 | 222.8 | 227.5 | 112.2 | 161.1 | 143.1 |
| Exports | 28.8 | 36.1 | 5.0 | 5.6 | 4.7 | 9.4 |
| Net Foreign Trade | 220.1 | 186.7 | 222.5 | 106.6 | 156.4 | 133.7 |
| Total Apparent Supply | 1467.3 | 1373.5 | 1281.5 | 1127.6 | 1355.5 | 1351.9* |
| Total Consumption | 1105.5 | 1073.5 | 985.7 | 908.7 | 1147.0 | 1078.6* |

*Estimated—Reliable figures not available.

## Table III

## UNITED STATES MINE PRODUCTION OF LEAD

| | AVERAGE TONS PER YEAR 1938-1947 | | PERCENTAGE | |
|---|---|---|---|---|
| EASTERN STATES | | | | |
| New York, Virginia, Tennessee | 5,485 | | 1.32 | |
| | | 5,485 | | 1.32 |
| CENTRAL STATES | | | | |
| SE. Missouri | 160,451 | | 38.66 | |
| Tri-State (Kansas, Oklahoma, & SW. Missouri) | 33,102 | | 7.98 | |
| Arkansas, Illinois, Kentucky & Wisconsin | 3,438 | | .83 | |
| | | 196,991 | | 47.47 |
| WESTERN STATES | | | | |
| Idaho | 89,909 | | 21.66 | |
| Utah | 53,690 | | 12.94 | |
| Arizona | 17,087 | | 4.12 | |
| Montana | 15,698 | | 3.78 | |
| Colorado | 14,551 | | 3.50 | |
| California, Nevada, New Mexico & Washington | 21,618 | | 5.21 | |
| | | 212,553 | | 51.21 |
| TOTAL U. S. Mine Production | | 415,029 | | 100.00% |

Before trying to establish a lead balance sheet for our country, one should examine the pattern of consumption in order to obtain a good impression of what our normal appetite is. Here are the consumption values beginning five years before World War II:

U. S. Lead Consumption
(thousand tons)

| | | | |
|---|---|---|---|
| 1935 | 538.9 | 1942 | 1012.9 |
| 1936 | 633.5 | 1943 | 1105.5 |
| 1937 | 678.7 | 1944 | 1073.5 |
| 1938 | 546.0 | 1945 | 985.7 |
| 1939 | 667.0 | 1946 | 908.7 |
| 1940 | 782.0 | 1947 | 1147.0 |
| 1941 | 1050.0 | 1948 | 1100.0 (est.) |

The increase in consumption during the war years is explainable. It is surprising, however, to note that we never returned to prewar rates of consumption. One might surmise that this condition was caused by the delay in refilling a huge and empty pipeline.

The difficulty lead buyers are having in trying to procure somewhere near their needs suggests the idea of setting up a balance sheet to show supply and demand in the United States. In Table II an attempt has been made to give such an accounting.

The first thing to be noted in this table is the falling off of stocks in each year since 1943. Where we once had a Government stockpile of almost a quarter million tons, it virtually disappeared by 1948. The present state of world affairs has so alarmed certain people that Congress passed a law requiring the setting aside of sufficient quantities of lead each month to accumulate a 70,000-ton stockpile by June 30, 1949.

Production of refined lead was excellent in 1947. However, 1948 production was seriously handicapped by a long strike at major processors plus maritime strikes which prevented the importation of ores and concentrates.

Attention is called to the production of lead at secondary sources. This includes the production of smelters who use lead scrap as their raw material, re-refine it, and return the lead to the economic cycle. A class of lead scrap that is probably most important, certainly in greatest volume, is lead battery plates that have been salvaged from worn-out storage batteries. Since January 1, 1944, about 76% of all the lead consumed in the storage battery industry was returned for re-use. Secondary lead has now become equal in importance to primary lead so far as volume production is concerned.

If our national consumption continues around 1,100,000 tons of lead per year, where will it come from? It seems fair to expect 450,000 tons from primary sources, and 450,000 tons from secondary sources, leaving 200,000 tons to fill the requirements. This can come either from the stockpile, if it is big enough, or from imports. Net imports since 1945 have been well below 200,000 tons, which required us to dip into our dwindling stocks until they are dangerously low.

This means that we must either curb our appetite or find more to feed it. Prospecting was sadly neglected during war years. It will be at least another year before we can expect improvement in primary production if serious labor shortages can be surmounted. Imports can be maintained or strengthened only to the degree that our domestic price entices such lead for a profit.

A word of explanation is in order on Table II. The difference between total supply available and estimated consumption for some years is not

always exactly like the stocks listed at the beginning of a succeeding year. This happens because the statistics had to be obtained from three sources, and there is apt to be some minor duplication in reporting certain statistics.

### *Where Is Lead Produced?*

The United States is not self-sufficient in lead production. We are deeply involved in world commerce, so we must watch world production and markets. The world map herewith indicates locations where lead is mined on a commercial scale, also the smelters or refineries and principal lines of transportation. In one complete picture, the world traffic in lead is shown.

Let us begin our study of production within the United States. Table III shows the production areas and average volume for the last ten years.

The southeast Missouri region has always been the largest producing section in our country from a mining viewpoint. The St. Joseph Lead Company operates most of the mines in this region and is the largest producer, having averaged 141,496 tons per year for the 10-year period 1938-1947.

If one considers lead production on a smelter basis, the story changes. The St. Joseph Lead Company has a smelting capacity of 96,000 tons per year at Herculaneum, Missouri, but normally operates only two of the three blast furnaces through the major part of a year. American Smelting & Refining Company treats about two-thirds of the output of St. Joe Lead at its Federal, Illinois, smelter. The company has a smelting capacity (lead output) of about 775,000 tons annually in the United States and 475,000 tons annually in Mexico. This tonnage rates A. S. & R. as the largest lead smelting company in the world. Its average annual output over the last ten years has been just short of 470,000 tons.

During this 10-year period the production of secondary lead from scrap has averaged 340,843 tons per year. This average figure, however, is not indicative of the potential volume. In 1947, production reached an all-time maximum of 504,000 tons. This shows that an attractive price can coax plenty of scrap into the market.

So much for domestic production. Since we are not self-sufficient in lead, it is wise to examine world production in order to determine where we need to look to fill our domestic needs. This information is given in Table IV. Whereas the U. S. production figures in the preceding table is on a mining basis, Table IV is on a smelting basis. In the European and Asiatic countries, lead production was so badly disrupted or destroyed during the war that 10-year figures are worthless. In this section, therefore, the estimates given are for prewar figures if any succeeding years' production showed that the capacity was either not destroyed or was rebuilt. Otherwise, postwar figures are the governing factor.

**Table IV**

**LEAD PRODUCTION OF THE WORLD**

| COUNTRY | AVERAGE ANNUAL PRODUCTION 1938-1947* (TONS) | | PERCENTAGE OF WORLD PRODUCTION | |
|---|---|---|---|---|
| U. S. A. (domestic ore) | 415,029 | | 23.88 | |
| U. S. A. (foreign ore) | 69,942 | | 4.02 | |
| Canada | 194,250 | | 11.17 | |
| Mexico | 210,957 | | 12.14 | |
| TOTAL—North America | | 890,178 | | 51.21 |
| Argentina | 20,436 | | 1.17 | |
| Peru | 37,860 | | 2.18 | |
| TOTAL—South America | | 58,296 | | 3.35 |
| Australia | | 229,869 | | 13.22 |
| Austria (1945-1947) | 3,400 | | .20 | |
| Belgium (1946-1947) | 36,000 | | 2.07 | |
| France (1938-1939, 1946-1947) | 43,000 | | 2.47 | |
| Germany (1938-1944) | 187,895 | | 10.80 | |
| Great Britain (1943-1947) | 3,965 | | .23 | |
| Italy (1947) | 19,620 | | 1.13 | |
| Poland (1947) | 12,490 | | .72 | |
| Rumania (1945-1947) | 3,705 | | .22 | |
| Russia (1939) | 82,500 | | 4.74 | |
| Spain (1938-1947) | 33,485 | | 1.93 | |
| Sweden (1944-1947) | 11,130 | | .64 | |
| Yugoslavia | Unknown | | — | |
| Burma (1938-1941) | 86,855 | | 5.00 | |
| Japan (1938-1941) | 9,225 | | .53 | |
| Korea | Unknown | | — | |
| TOTAL—Europe and Asia | | 533,270 | | 30.68 |
| Africa (1938-1940, 1947) (Rhodesia and Tunis) | | 27,300 | | 1.57 |
| TOTAL WORLD PRODUCTION | | 1,738,913 tons | | 100.00% |

*Base period for countries of Europe, Asia, and Africa varies, and is separately indicated following name of country.

## TABLE V
## LEAD IMPORTS OF THE UNITED STATES
(Thousand Tons)

| COUNTRY | 1945 | | 1946 | | 1947 | | 8 Mo. 1948 | |
|---|---|---|---|---|---|---|---|---|
| | ORES | PIG | ORES | PIG | ORES | PIG | ORES | PIG |
| Mexico | .7 | 160.2 | .4 | 53.5 | 3.1 | 85.8 | 1.9 | 56.3 |
| Canada | 8.7 | 19.4 | 4.9 | 22.8 | 4.3 | 59.1 | 2.5 | 39.7 |
| Australia | 17.9 | 13.7 | 8.3 | 8.2 | 7.1 | 10.6 | 4.9 | 14.6 |
| Peru | 14.5 | 34.2 | 5.2 | 15.6 | 10.5 | 1.2 | 5.8 | 15.7 |
| Newfoundland | 17.0 | — | 19.0 | — | 10.5 | — | 4.8 | — |
| Bolivia | 1.6 | — | 2.2 | — | 6.2 | — | 12.6 | — |
| Chile | 2.3 | — | 1.5 | — | 3.0 | — | 3.4 | — |
| Yugoslavia | — | — | — | — | — | 1.1 | — | 1.0 |
| Africa | 2.3 | — | — | — | 5.6 | .1 | 6.4 | — |
| Japan | — | — | — | 12.1 | — | — | — | — |
| Italy | — | — | — | — | — | — | — | 12.0 |
| Spain | — | — | — | — | — | — | — | 1.7 |
| Others | 5.0 | — | 2.9 | — | .5 | 3.2 | .6 | 2.1 |
| Totals | 70.0 | 227.5 | 44.4 | 112.2 | 50.8 | 161.1 | 42.9 | 143.1 |

## Table VI
## CANADIAN LEAD STATISTICS
(Thousand Tons)

| | 1945 | 1946 | 1947 | 8 Mo. 1948 | 12 Mo. 1948* | AVERAGE |
|---|---|---|---|---|---|---|
| Refined Output | 163.1 | 165.8 | 162.0 | 93.6 | 140.0 | 157.7 |
| Consumption | 55.6 | 61.6 | 64.1 | 38.7 | 58.0 | 59.8 |
| Exports | | | | | | |
| To U. S. | 20.8 | 23.9 | 59.1 | 32.9 | 50.0 | 38.4 |
| To U. K. | 71.2 | 50.2 | 43.9 | 29.2 | 45.0 | 52.6 |
| To France | 5.9 | 12.7 | 12.1 | 1.5 | 2.0 | 8.2 |
| To Netherlands | 4.6 | 10.2 | ... | ... | ... | ... |
| Total Exports | 107.3 | 104.1 | 125.0 | 65.1 | 100.0 | 109.1 |

*Estimated.

This question is asked to focus attention on the world trade in lead rather than the use classification by class or industry. Since the United States is not self-sufficient, we need to concern ourselves with where our imports are coming from. This is shown in Table V.

The normal trade routes are shown on the world map. Of course, there are political considerations which will influence the trade between countries. Over the years, however, the United States has looked to Mexico, Canada, Australia, and Peru, in that order, to balance our lead budget. The efforts of extensive prospecting in French Morocco by a combine which includes the St. Joseph Lead Company are bearing fruit in increased imports from Africa. Spain and Italy do not export to the United States, except in 1948, when the critical shortage attracted this metal to our country because needed U. S. dollars were available to pay for it at premium prices.

Now let us turn to the normal trade of some of the countries with whom we are closely associated in the commerce of lead. To the best of the author's knowledge, there are no published official statistics for the production, consumption, and exports of lead for Mexico. The next important country is Canada, whose trade is shown in Table VI.

While the United States is geographically the closest market for Canadian lead, her exports to us are on an allocation basis because her first allegiance, as a member of the Commonwealth of Nations, is to the United Kingdom. A similar situation exists in the case of Australia, as shown in Table VII. It may be of interest to observe how Australian lead was diverted to the United States, arsenal of democracy, during the war years. Australian exports to the U. S., expressed in thousand tons, were as follows:

| | | | |
|---|---|---|---|
| 1940 | 21.8 | 1943 | 67.2 |
| 1941 | 67.0 | 1945 | 31.6 |
| 1942 | 148.6 | 1946 | 31.8 |

Because of our interrelationship with the lead commerce of the British Commonwealth, we cannot overlook the balance sheet of the United Kingdom, presented in Table VIII. The British consumption is higher this year than in any year since 1941. Approximately two-thirds of their needs are supplied from imports, the remainder coming from

the re-refining of lead scrap. Imports have fallen off considerably, so that Britain has had to dip deeply into her stockpile, which was down to 15,200 tons on November 1, 1948 —less than a 30-day supply. If we work backwards from these figures, we can now develop the fact that the United Kingdom obtains a substantial portion of its lead imports from countries other than Canada and Australia. This is shown in the lower section of Table VIII.

What about the rest of the world? The tonnage of other countries, as gleaned from infrequent reports, shows their lead trade to be almost inconsequential. Here are some figures for 1947:

Argentina imports from Mexico, Peru, and the United States .....12,000 T.

Czechoslovakia imports from Yugoslavia, United Kingdom, United States, and Russia .....18,420 T.

Denmark imports ..... 4,500 T.

Italy imports from Yugoslavia, Spain, Austria, and Belgium .....8,275 T.

Italy exports to United States and others (in 6 months of 1948) .....13,365 T.

Sweden imports .....19,500 T.

Norway imports ..... 4,600 T.

### *What Is My Share?*

The purchasing agent, charged with a responsibility of procuring his company's needs, will in many instances take nothing less than his requirements as his share. However, we should not overlook the fact that, especially in a sellers' market, there are occasions when an enthusiastic sales department will convince management to expand or increase production quotas. Management does not always realize that the expansion they have set their minds to may raise a serious problem of supply, involving, as it may, more than their company's share of some scarce commodity.

It is not always a reflection on the purchasing department when companies, like those in the automotive industry, are compelled to suspend operations because of the scarcity of some material. In the case of the automobile industry, the suspension was often due to inability to obtain sufficient steel sheets. Here the producers allocated their steel on the basis of sales patterns established in earlier years. The same allocation principle usually applies to any other

**Table VII**
**AUSTRALIAN LEAD STATISTICS**
(Thousand Tons)

| | 1938 | 1946 | 1947 | 8 Mo. 1948 | 12 Mo. 1948* | 3 Yr. AVERAGE* |
|---|---|---|---|---|---|---|
| Production | 251.6 | 184.3 | 202.8 | 133.2* | 200.0 | 195.7 |
| Consumption | 28.0 | 50.0 | 39.3 | 39.0* | 55.0 | 48.1 |
| Exports | | | | | | |
| To U. K. | — | 66.8 | 107.8 | 76.8 | 110.0 | 94.9 |
| To U. S.—ores | — | 8.3 | 7.1 | 3.6 | 5.0 | 6.8 |
| —refined | — | 9.5 | 10.6 | 19.2 | 25.0 | 15.0 |
| —total | — | 17.9 | 17.7 | 22.8 | 30.0 | 21.8 |
| Total Exports | — | 94.4 | 136.6 | 93.1 | 140.0 | 116.7 |

*Estimated.

**Table VIII**
**UNITED KINGDOM LEAD STATISTICS**
(Thousand Short Tons)

| Year | Stock Jan. 1 | Imports | Exports | Consumption | | |
|---|---|---|---|---|---|---|
| | | | | From Imports | From Scrap | Total |
| 1941 | 167.7 | 156.1 | 5.3 | | | |
| 1942 | 90.3 | 263.9 | 5.0 | 257.0 | 100.0 | 357.0 |
| 1943 | 96.1 | 253.7 | 6.1 | 220.7 | 97.7 | 318.4 |
| 1944 | 135.5 | 251.9 | 4.4 | 230.0 | 86.5 | 316.5 |
| 1945 | 152.0 | 197.8 | 12.6 | 250.4 | 79.0 | 329.4 |
| 1946 | 73.1 | 175.8 | 4.3 | 216.7 | 138.5 | 355.3 |
| 1947 | 27.2 | 217.7 | 2.8 | 199.1 | 156.2 | 355.3 |
| 8 mo. 1948 | 44.8 | 114.7 | 1.5 | 138.0* | 109.7* | 247.7* |
| *1948 | | 175.0 | 2.3 | 207.0 | 163.0 | 370.0 |

*Estimated.

**UNITED KINGDOM IMPORTS**

| | 1946 | | 1947 | | 8 Mo. 1948 | |
|---|---|---|---|---|---|---|
| | Tons | % | Tons | % | Tons | % |
| From Australia | 66.8 | 38.0 | 107.8 | 49.5 | 76.8 | 67.0 |
| Canada | 23.9 | 13.6 | 59.1 | 27.2 | 32.9 | 28.7 |
| Others | 85.1 | 48.4 | 50.8 | 23.3 | 5.0 | 4.3 |
| Total | 175.8 | 100.0 | 217.7 | 100.0 | 114.7 | 100.0 |

commodity, not under government regulation, when the demand far exceeds the supply.

The buyer of the scarce commodity must determine some measuring stick whereby he is able to judge whether or not he is securing his share. The first step is to study the consumption of the commodity, industry by industry. Then he can apply his company's consumption values to the same comparative years, whereby he will learn (1) how his particular industry is doing, and (2) how his company is faring with respect to his class of industry.

Applying this reasoning to lead, Table IX shows the calculations for a hypothetical example—the XYZ Paint Company. It is assumed that the company had a steady demand for their paint and never throttled production because of lack of sales.

The tonnage use values are converted into percentages of the total, as shown in the right-hand section of the table, to get a measuring stick for the buyer. This reveals some very interesting data. "Storage Batteries" have always been the largest user of lead in the United States. "Cable" showed some signs of slipping, but was bolstered by special attention by some large producers. This could have happened as a bit of medicine to save an important outlet, for there has been plenty of research devoted to plastic and aluminum sheathing of cable.

Getting back to the XYZ Paint Company, it is noted that they made substantial improvement during 1945, 1946, and 1947, when the rest of the paint industry really slipped. In 1948, the paint industry figure dropped to less than 7%, whereas XYZ gained in comparison. However, the XYZ buyer should not rest on his laurels with respect to the paint industry when all the other lead using industries are consuming a larger total. He is now consuming only 0.85% of the total, whereas his record had been up to as high as 0.98% in 1946. Time to get busy if his company needs more!

### *Market News*

The buyer specializing in a particular commodity is usually in daily communication with producers to keep himself tuned to the market. The alert buyer, however, will not trust entirely to this source of information, but will regularly read the periodicals devoted to the commodity in which he is interested.

In the lead industry there are two important daily papers that should be a "must" every day. They are *American Metal Market* and *Daily Metal Reporter*. These papers re-

**Table IX**

**Use of Lead in the United States** (Thousand Tons) (including Antimonial Lead)

| | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 9 Mo. 1948 |
|---|---|---|---|---|---|---|---|
| Storage Batteries | 219.5 | 252.4 | 297.1 | 291.2 | 252.1 | 367.4 | 245.6 |
| Cable Sheathing | 160.4 | 146.0 | 126.9 | 102.1 | 93.3 | 155.1 | 131.0 |
| Construction | 107.8 | 82.5 | 103.2 | 103.1 | 110.0 | 112.5 | 80.6 |
| Paint and Varnish | 99.1 | 94.4 | 98.5 | 74.5 | 78.3 | 91.6 | 56.0 |
| Ammunition | 79.5 | 160.5 | 50.6 | 39.9 | 30.1 | 39.9 | 33.2 |
| Tetraethyl | 54.3 | 69.3 | 94.7 | 87.6 | 60.3 | 84.6 | 69.9 |
| Insecticides | 17.3 | 20.2 | 24.2 | 23.7 | 26.1 | 32.7 | 14.0 |
| Printing | 20.4 | 16.9 | 22.6 | 25.4 | 33.9 | 25.6 | 22.1 |
| Railroads (Bearings) | 18.7 | 22.4 | 26.8 | 26.9 | 22.3 | 22.7 | 17.5 |
| Collapsible Tubes | 9.9 | 15.0 | 16.3 | 15.6 | 13.1 | 11.1 | 5.1 |
| Unclassified | 226.0 | 225.9 | 212.6 | 195.7 | 189.2 | 203.8 | 133.9 |
| Total | 1012.9 | 1105.5 | 1073.5 | 985.7 | 908.7 | 1147.0 | 808.9 |
| XYZ Paint Company: | 8.7 | 9.1 | 8.9 | 9.2 | 8.9 | 9.3 | 6.9 |

**Use of Lead in the United States by Percentage**

| | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 9 Mo. 1948 |
|---|---|---|---|---|---|---|---|
| Storage Batteries | 21.67 | 22.83 | 27.68 | 29.54 | 27.74 | 32.03 | 30.36 |
| Cable Sheathing | 15.84 | 13.20 | 11.82 | 10.36 | 10.27 | 13.52 | 16.20 |
| Construction | 10.64 | 7.46 | 9.61 | 10.46 | 12.11 | 9.81 | 9.96 |
| Paint and Varnish | 9.78 | 8.55 | 9.18 | 7.56 | 8.62 | 7.99 | 6.92 |
| Ammunition | 7.85 | 14.52 | 4.71 | 4.05 | 3.31 | 3.48 | 4.10 |
| Tetraethyl | 5.36 | 6.27 | 8.82 | 8.89 | 6.64 | 7.38 | 8.64 |
| Insecticides | 1.71 | 1.83 | 2.25 | 2.40 | 2.87 | 2.85 | 1.74 |
| Printing | 2.01 | 1.53 | 2.11 | 2.58 | 3.73 | 2.23 | 2.73 |
| Railroads (Bearings) | 1.85 | 2.03 | 2.50 | 2.73 | 2.45 | 1.98 | 2.16 |
| Collapsible Tubes | .98 | 1.35 | 1.52 | 1.58 | 1.44 | .97 | .64 |
| Unclassified | 22.31 | 20.43 | 19.80 | 19.58 | 20.82 | 17.76 | 16.55 |
| Total | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| % Paint Industry | 8.77 | 9.63 | 9.04 | 12.34 | 11.36 | 10.15 | 12.32 |
| % Lead Industry | .86 | .82 | .83 | .93 | .98 | .81 | .85 |

port current market news and occasional surveys of foreign conditions. They also report periodically on statistical information released by the American Bureau of Metal Statistics.

The *Engineering and Mining Journal* contains the monthly average prices for metals, which become the official figures for computation of all contracts for sales at "average prices".

We should not overlook the benefits that can be derived from membership in an industry organization, which in this case is the Lead Industries Association, located at 420 Lexington Avenue, New York City. This association informs its members of the weekly sales of lead for (1) current or prompt shipment, (2) future shipment, (3) grades of lead sold, and (4) the price condition applicable, i.e., spot market, average, or price at time of shipment. The association also publishes probably the most authentic record of consumption according to industry that is available.

### Lead Prices

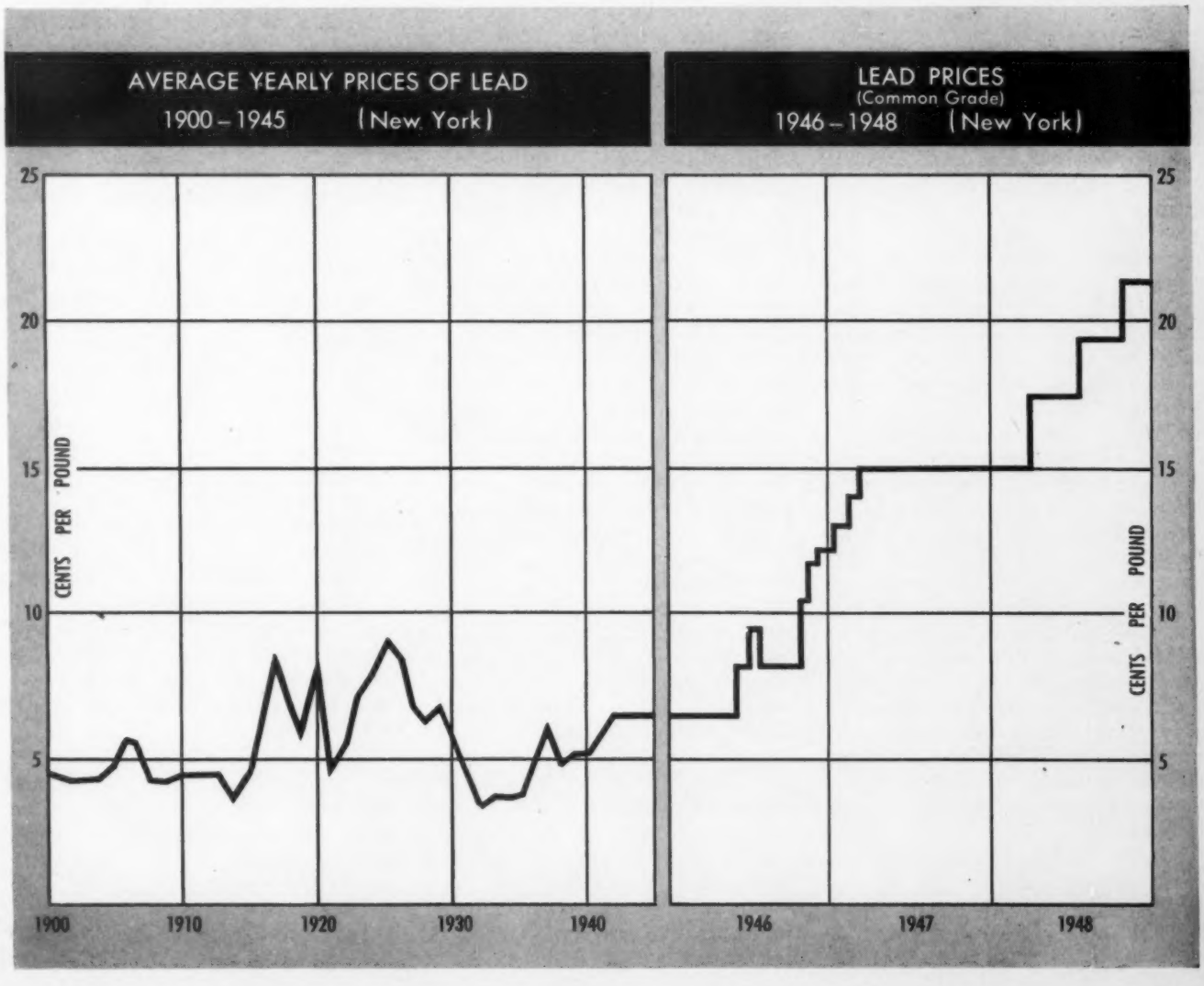
For many years, until September, 1939, the world price of lead was controlled or dictated by the London Metal Exchange. The difference in time between London and New York gave London an advantage of several hours trading in any one day before New York prices could be established. Since 1939, prices have probably been influenced most by the action of our major producers or factors in New York.

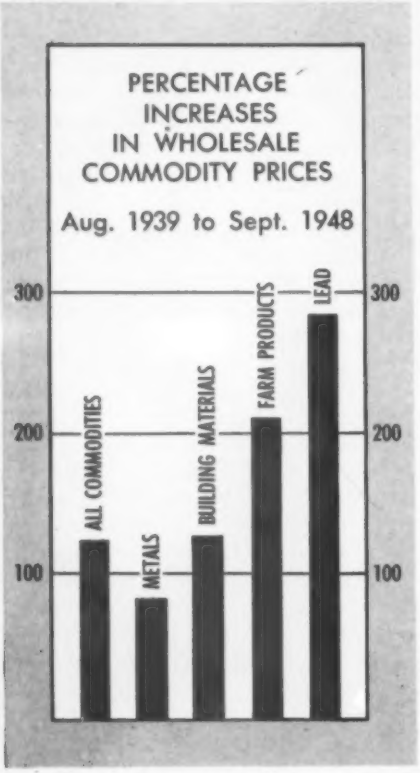
It is a law of economics that the prices at which identical units of any goods are sold in markets between which such units may pass freely without any deterioration in quality or loss in quantity will not for any length of time differ by more than the expense of carriage between such markets. This is a law of coexistence which is proved by deductive and confirmed by inductive reasoning.

Again, it is a law of economics than an increase in the supply of the units of any goods offered for sale in a market tends to lower the price that can be secured. This is a law of sequence.

In both cases it is implied that free communication between markets exists and that disturbing factors such as political influences are absent. Increased supply may not tend to increase price if it is offset by an equal or greater demand.

Primary producers have established a price of 21.5¢ per pound of lead at New York (at the time this paper was prepared). This is our






prime basing point because it is probably our greatest consumption (buying) center. The second most common basing point is St. Louis, which for years was quoted at 0.15 per pound less than the New York price. In recent years our largest producer has quoted 0.20 per pound differential as more nearly representative of the actual freight differential which exists between the two cities. We now have the peculiar situation of two St. Louis prices, depending on which company is quoting.

The British Commonwealth of Nations have a controlled economy, so that member nations—Australia and Canada—have not had a heavy influence on world price. So we look to our next largest outside source of supply, Mexico. Several years ago, the price quoted at Mexican Gulf ports, plus the freight to New York, plus the U. S. import duty, equalled the New York price. In a similar manner, the Mexican price plus freight to British port, plus average freight inland to consumers, equalled the United Kingdom user's price. Then the upsets began!

United Kingdom came under Labor Party control. The Ministry of Supply allocated lead and established prices. The Ministry made all of its contracts, usually for a calendar quarter, with Australia and Canada at certain prices and with other countries (e.g., Mexico) at whatever price could be bargained for. At the same time the Ministry fixed the consumers' price for the quarter, often at subsidized values.

Since U.K. was bidding for lead in Mexico against the U. S., she offered somewhat higher than the established price. This higher price would then have a tendency to permit greater quantities of "free" Mexican lead to U.K. (By "free" lead is meant metal that is not directly controlled by two U. S. companies who sell a high percentage of Mexican lead.) Naturally, the U. S. offered counter proposals at least equal to or slightly higher than these offers.

So the New York price went up on repeated rounds. It should be pointed out that great differentials could not exist without some action on the part of one party or the other, and that in no case did it ever result in more lead. The Mexicans are not of a mind to increase production and thereby suffer from labor troubles, freight car shortages, and possible political complications. The Mexican government exacts a 15% *ad valorem* duty on all exports, which also promises to throttle her exports to some extent.

While all this has been going on, let us take a look at Australia. The Australian government grants domestic users first call on lead at a controlled price. The price, at this writing, is equivalent to 3.17¢ per pound, and has been in existence since 1939. Now, 21.5¢ is naturally far more attractive to Australian producers than 3.17¢, and they would rather export all of it. However, the threat of governmental control of industry is a decisive influence, and the consumption figures shows that the domestic appetite for lead is going up.

The portion remaining after domestic needs are satisfied is available for export. By trade pattern established in earlier years, and by moral obligations to the Commonwealth, United Kingdom is able to contract for approximately 70% of the remainder. This leaves 30% of the remainder available to the highest bidder.

It is said that much of the lead produced in Australia costs more than the fixed selling price, hence producers are being unfairly penalized for the benefit of the consumer. Naturally, domestic consumption is stimulated with such a state of affairs. The editor of *American Metal Market* has stated: "Socialism as practised by the Labor Government in the United Kingdom is mild as compared with that in which the Labor Government in Australia is indulging."

In Canada, the government fixed the price of lead on January 1, 1940, at 5¢ per pound, delivered Montreal or Toronto. This price held for domestic consumption until January 21, 1947, when it was raised to 10.63¢. As in Australia, this controlled price greatly stimulated domestic consumption. In June, 1947, when the ceiling was removed, lead went to 14.25¢; then to 16.75¢ in April, 1948; to 18.75¢ in July; and to 20.75¢ in November. Thus, after the market price was freed from governmental control, the first law of economics came into play.

### *Price Range*

The lowest lead price of record in the U. S. was 2.6¢ per pound, New York, in August, 1896. Thereafter, and until 1946, the price fluctuated generally in narrow brackets, but generally around 4¢, with the highest yearly average of 9¢ per pound in 1925 Then in 1946 the race began, reaching 21.5¢ on November 1, 1948.

In October, 1948, Babson published a graph comparing September prices for various commodity groups with those in effect in August, 1939. Here are some of the increases reported:

| | |
|---|---|
| Chemicals | 78% |
| Metals | 84% |
| Fuel | 90% |
| Manufactured Products | 108% |
| Textile Products | 118% |
| Building Materials | 128% |
| Foods | 180% |
| Farm Products | 210% |

Had Mr. Babson segregated lead as a separate item, it would have shown 285% increase, which is by far the largest of any of the common metals and almost every major commodity.

So far we have been talking about the regularly quoted market prices for lead. Most major consumers were not able to get their full needs in 1948 at market prices. Our producers were plagued by strikes, and their shortened supply had to be prorated to their regular customers. This situation was taken advantage

of by foreign interests, who offered lead at a premium of 4¢, 5¢, or 6¢ per pound. It has since been disclosed that some countries that made these sales to us at premium prices purchased the lead from other countries with money loaned to them by the U. S. under E.C.A.

### *Lead Scrap and Smelting Charges*

Some companies that couldn't fill their needs for virgin lead from domestic or foreign sources, turned to secondary smelters who "softened" lead from scrap at a price. We should here describe how scrap is bought and sold.

The price of lead scrap is determined by the assay of the scrap, the smelting charge, and the f.o.b. point. It is customary in normal times for the seller to pay the freight. The assay will show metal content of both lead and antimony, but we apply the total assay percentage to the market price of lead alone. Thus 100 pounds of scrap assaying 72% will cost 72 x 21.5¢ or $15.48. Actually the 72 pounds of metal will include about 4 pounds of antimony worth 40¢ per pound.

The cost of refining the metal must be subtracted from the value of the metal. This cost is referred to as a "smelting charge", which also includes a smelter profit. The smelter's charge should nominally be from $30 to $40 per ton, depending on the particular smelter's efficiency of conversion. Actually, the smelting charge quoted will reflect the supply and demand situation on scrap. In November, 1947, when everyone expected the market price of lead to drop, supplies of scrap were freely offered, there were few takers, and the smelting charge rose to $60 per ton. Conversely, as lead supplies grew more critical and the demand for scrap increased, the smelting charge went to zero. This is another way of saying that the premium offered was equivalent to the normal smelting expense plus profit. In fact, the scrap situation became so bad in October, 1948, that "minus" smelting charges of $10 per ton were quoted. This means that normal smelting expense averaging at least $35 per ton was waived and an additional $10 per ton paid.

When a smelting charge exists, it is applicable to the gross weight of the scrap, and not to the metal content. When the smelting charge is zero and no deductions are made, it is the signal for unscrupulous "junkies" to water the cars and contaminate the scrap with foreign material. The only safe course is to deal only with reputable collectors of scrap and to avoid offers from strangers.

When scrap battery plates are remelted, the lead alloy produced will contain about 5% of antimony. The smelter may sell this as an alloy or he may choose to soften it by refining, the choice depending on the price attractiveness of either metal. The refining process, especially the treatment necessary to remove the last traces of antimony, makes the cost higher when soft lead is produced. This part of the treatment is easily worth $20 per ton.

This is why the price of soft lead purchased from secondary smelters is usually several cents per pound higher than the price for virgin lead. Since the metal return from scrap will not average over 70%, the overall premium becomes the scrap premium plus refining expense ($20 per ton), *divided* by 70%. For example, scrap assaying 73% and with zero smelting charge: the metal will cost 21.5¢ x 73, or 15.695 per pound;




**Storage batteries are the greatest single factor in U.S. lead consumption, accounting for more than one-quarter of the total. Scrapped storage batteries are also the greatest single source for secondary lead.**

add $20 per ton and divide by .70, and you arrive at 23.85¢ per pound when the market price for lead is only 21.5¢. In recent months of acute shortage, smelters have charged premiums of 4¢ or more per pound.

Since the purchasing department has the responsibility of buying sufficient materials to keep a plant operating at a certain rate, the main objective is to keep the average overall cost at a minimum. Today, labor contracts alone can be quite costly if a plant is forced to close because of lack of raw materials. Therefore it is in many cases cheaper to keep the plant going if only a portion of the materials are purchased at a premium.

Let us cite an example in lead. Suppose that a company is able to procure 65% of their requirements from regular sources of virgin lead at market price. To make up the balance, the buyer receives and accepts offers of foreign lead at market price plus 3¢. He turns to the secondary smelter for 10% in softened lead, for which he pays market price plus 4¢. His average overall cost now becomes market price plus 1.15¢ per pound, a premium which might be smaller than the cost of laying off workers to match 65% production.

### Procuring Requirements

Let us first enumerate some of the companies to whom we might go to buy lead.

1. American Smelting & Refining Co., 120 Broadway, New York. Refines about ⅔ of U. S. lead production. Has extensive mining properties in Mexico.

2. St. Joseph Lead Co., 250 Park Ave., New York. The largest mining company in the U. S. Main production centers are in southeast Missouri. Is also exclusive eastern sales agent for Bunker Hill lead, a very good grade of corroding lead mined in Idaho and Utah.

3. U. S. Smelting, Refining & Mining Co., 57 William St., New York. Limited output has been allocated only to customers of long standing.

4. National Lead Co., 111 Broadway, New York. Operates its own smelter at Perth Amboy. A subsidiary, Master Metals, operates a secondary smelter at Cleveland. Specializes in prepared oxides and antimonial alloys. Also owns the only major antimony smelter, at Laredo, Texas.

5. American Metal Co., 61 Broadway, New York. Exclusive U. S. sales agent for Tadanac lead, produced by Consolidated Mining & Smelting Co. at Traill, British Columbia. Also imports Mexican and Peruvian lead for domestic sale.

6. C. Tennant Sons & Co., Empire State Bldg., New York. Sales agent for imported Australian lead. Also has British affiliates who originate periodic offers of Italian, Belgian, Spanish and Burmese lead.

7. Eagle-Picher Lead Co., American Bldg., Cincinnati. Main mining product is zinc, with lead of secondary volume. Producer of fine oxides and litharge, also insecticides and paint materials. Little available for new customers.

8. Goldsmth Bros. Smelting & Refining Co., 58 E. Washington St., Chicago. A secondary smelter with main operations in Chicago area. Handles custom smelting of scrap battery plates for National Lead Co. in Chicago.

9. Penna. Smelting & Refining Co., Casper & Ontario Sts., Philadelphia. A secondary smelter that sells antimonial alloys, softened lead, type metal, and lead for ammunition purposes.

10. Bers & Co., Ashland & Lewis Sts., Philadelphia. Operation similar to No. 9.

11. Hyman Viener & Sons, 5300 Hatcher St., Richmond, Va., Operation same at No. 9.

12. Gardiner Metal Co., 4820 Campbell Ave., Chicago. Secondary smelter dealing in pipe, babbitt, and antimonial alloys.

It would seem an almost hopeless task for a new consumer to enter the market today for substantial tonnages of lead at regular intervals. Practically all producers and sales agents have been forced to allocate their limited tonnages to old customers only. With Government requisitions for stockpiling purposes, further cuts will have to be made, and competition for procurement of lead is expected to become more severe.

How then can the buyer improve his company's supply? For many years, sales managers have been hammering this old adage into salesmen: "Persistent plugging is bound to bring results." As buyers, it is now our turn to become salesmen and to do the plugging. Call on all the companies. Don't miss a single one. While their salesmen may have retracted into a shell, go seek them out and cultivate their friendship. Repeated calls will wear down the resistance to say, "Sorry . . . .", and they will remember you at the first opportunity when any unallocated quantities are available. Talk with them over the telephone, between visits, to exchange market views and to keep in touch.

It is just as much a mistake in buying as in selling to "put all your eggs in one basket." Don't favor one company over all others. Rather, court their favors as a steady customer even though the divided business may mean relatively low units of purchase. Past experience shows this policy to be the least disruptive when one company encounters labor troubles or other interruptions.

Don't expect miracles to happen overnight. And don't forget the four P's: *Persistent Plugging Produces Plumbum.*

### The Future

Every so often the alarmists get into print with the story that we have only 12 to 15 years' reserve of lead in the U. S. In March, 1947, Mr. Clinton Crane, then president of St. Joseph Lead Co., told a meeting of mining engineers that there were sufficient known lead ore reserves to last 15 to 25 years, which could be economically mined and sold at the conservative anticipated reasonable price of 6¢ per pound. "The reserves of lead at 20¢ would undoubtedly be infinitely greater than the reserves at 6¢.

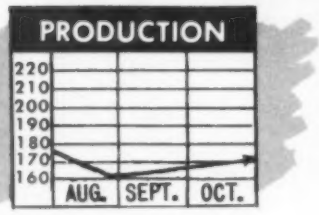
Later, in December, Andrew Fletcher, newly elected president of the same company, stated: "I am confident that the world and the United States have vast unknown tonnages of ore resources, which will be found and will be made available under the stimulus of strong and sustained demand, and resultant remunerative prices."

Two years ago, *Barron's Business Weekly* quoted a Bureau of Mines survey concerning the known lead mineral resources of the world. It showed 35% in the U. S., 45% in the British Commonwealth, 5% in Mexico, and the remainder scattered in 3% or less units.

In December, 1948, Dr. Lange Koch of Denmark announced the discovery of lead in Greenland, and estimated the deposit at a million tons. The discovery was made at King Oscar's Fjord, which is icebound throughout the year except for six weeks in the summer, so there is some question whether climatic handicaps can be overcome. Samples have assayed 80% lead, sulphur, and silver.

An optimistic yet reasonable estimate ventured by a man prominent in the Lead Industries Association forecasts domestic mine production of 425,000 tons annually, barring strikes, plus 425,000 tons of secondary production and 290,000 tons of imports, to balance yearly consumption of 1,140,000 tons. It may take some months for these rates to be obtained, but we *may* find demand and supply in reasonable by the end of 1949.

# Where We Stand

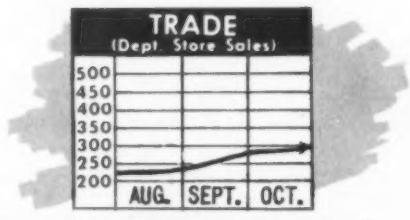



## Today's Business Trends As Reported In Current Statistics

| | BASE | LATEST | MONTH AGO | YEAR AGO | % OF CHANGE IN MONTH | % OF CHANGE IN YEAR |
|---|---|---|---|---|---|---|
| Industrial Production Index | 1935-39=100 | 171 | 167 | 188 | + 2.4 | — 9.0 |
| Steel Production (Weekly) | 000 net tons | 172 | 1,482 | 1,786 | —88.0 | —90.0 |
| Electric Power Production (Weekly) | mil KWH | 5,450 | 5,544 | 5,482 | — 1.7 | — 0.6 |
| Bituminous Coal Production (Weekly) | 000 net tons | 2,200 | 8,050 | 11,870 | —72.7 | —81.5 |
| Auto, Truck & Bus Output (Weekly) | units | 140,651 | 141,380 | 113,300 | — 0.4 | +24.8 |
| Petroleum Output (Weekly) | 000 bbls | 4,956 | 4,762 | 5,535 | + 4.0 | —10.5 |
| Engineering Construction (Weekly) | 000 $ | 162,163 | 146,647 | 142,204 | +10.6 | +14.0 |




| | BASE | LATEST | MONTH AGO | YEAR AGO | % OF CHANGE IN MONTH | % OF CHANGE IN YEAR |
|---|---|---|---|---|---|---|
| All Commodities (BLS) | 1926=100 | 152.1 | 152.7 | 165.0 | — 0.4 | — 7.8 |
| Farm Products | 1926=100 | 160.1 | 162.5 | 184.0 | — 1.5 | —13.0 |
| Metals & Metal Products | 1926=100 | 169.2 | 168.9 | 172.1 | + 0.1 | — 1.7 |
| Building Materials | 1926=100 | 189.4 | 188.8 | 203.8 | + 0.3 | — 1.2 |
| Steel Billets (Pitts.) | net ton | $52.00 | $52.00 | $52.00 | 0 | 0 |
| Steel Scrap, heavy melting, Pitts. | ton | 29.75 | 24.75 | 42.75 | +20.8 | —30.4 |
| Copper, electrolytic | lb. | .17 5/8 | .17 5/8 | .23 1/2 | 0 | —25.1 |
| Cotton, mid., 15/16" | lb. | .3028 | .3105 | .3197 | — 2.4 | — 5.3 |
| Rubber (rib-smoked sheets) | lb. | .16 1/4 | .18 1/8 | .22 5/8 | —10.3 | —28.0 |
| Wheat, No. 2 | bu. | 2.48 3/4 | 2.45 | 2.49 1/8 | + 1.5 | — 0.1 |




| | BASE | LATEST | MONTH AGO | YEAR AGO | % OF CHANGE IN MONTH | % OF CHANGE IN YEAR |
|---|---|---|---|---|---|---|
| Dept. Store Sales Index (Fed. Res.) | 1935-39=100 | 297 | 295 | 336 | + 0.6 | —11.7 |
| Commercial Failures (Dun & Bradstreet) | no. | 182 | 174 | 107 | + 4.6 | +70.1 |
| Freight Carloadings | cars | 574,228 | 703,930 | 891,811 | —18.4 | —35.6 |




| | | | | | | |
|---|---|---|---|---|---|---|
| Stock Prices (Standard & Poor's) | 1926=100 | 126.8 | 122.4 | 128.2 | + 3.6 | — 1.1 |
| Bank Clearings (New York) | mil $ | 5,714 | 5,464 | 5,889 | + 4.8 | — 3.0 |
| Federal Reserve Credit | mil $ | 18,287 | 17,780 | 23,967 | + 2.9 | —23.7 |
| Currency in Circulation | mil $ | 27,546 | 27,589 | 28,284 | — 0.1 | — 3.6 |

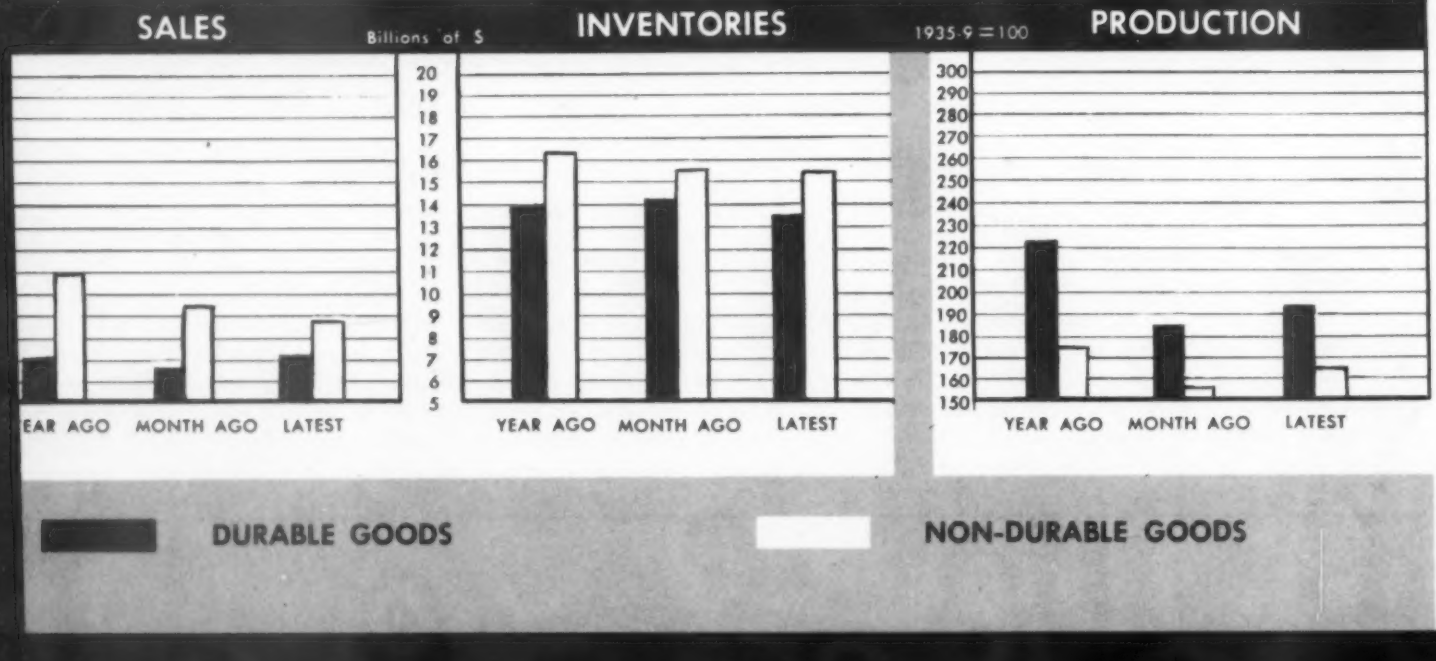
# MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

| | 1948 | 1949 | | | | | |
|---|---|---|---|---|---|---|---|
| | August | March | April | May | June | July | August |
| **Indexes of Value of Manufacturers' Sales (Average Month 1939 = 100)** | | | | | | | |
| Total Manufacturing | 342 | 326 | 315 | 317 | 311 | 294 | 335* |
| Durable Goods | 368 | 381 | 368 | 365 | 367 | 332 | 365* |
| Iron, steel & prod. | 362 | 371 | 336 | 328 | 321 | 280 | |
| Nonferrous metals & prod. | 421 | 361 | 352 | 328 | 336 | 289 | |
| Electrical machinery & equip. | 414 | 487 | 459 | 460 | 449 | 401 | |
| Machinery, except electrical | 347 | 350 | 331 | 334 | 329 | 290 | |
| Automobiles & equipment | 437 | 501 | 534 | 538 | 545 | 516 | |
| Transportation equip. except autos | 503 | 690 | 633 | 572 | 656 | 607 | |
| Furniture and finished lumber prods. | 259 | 234 | 228 | 231 | 229 | 211 | |
| Stone, clay and glass products | 289 | 255 | 258 | 283 | 285 | 264 | |
| Other durable goods | 282 | 228 | 223 | 225 | 235 | 213 | |
| Nondurable goods | 327 | 294 | 284 | 289 | 278 | 272 | 283* |
| Food and kindred products | 315 | 289 | 278 | 292 | 284 | 282 | |
| Textile-mill products (excl. apparel) | 342 | 280 | 252 | 249 | 270 | 227 | |
| Leather and products | 309 | 313 | 280 | 262 | 257 | 264 | |
| Paper and allied products | 342 | 312 | 295 | 299 | 287 | 267 | |
| Chemicals and allied products | 331 | 381 | 269 | 279 | 266 | 255 | |
| Petroleum and coal products | 341 | 306 | 288 | 293 | 286 | 300 | |
| Rubber products | 351 | N.A. | N.A. | N.A. | 271 | N.A. | |
| Other nondurable goods | 341 | 338 | 326 | 290 | 262 | 249 | |
| **Indexes of Book Value of Manufacturers' Inventories (Average Month 1939 = 100)** | | | | | | | |
| Total Manufacturing | 283 | 295 | 292 | 287 | 282 | 276 | 271* |
| Durable Goods | 291 | 316 | 314 | 307 | 301 | 293 | 285* |
| Iron, steel & prods. | 227 | 242 | 244 | 242 | 241 | 236 | |
| Nonferrous metals & prods. | 276 | 312 | 316 | 306 | 297 | 291 | |
| Electrical machinery and equipment | 396 | 425 | 417 | 403 | 391 | 374 | |
| Machinery, except electrical | 298 | 321 | 319 | 310 | 301 | 290 | |
| Automobiles and equipment | 476 | 548 | 529 | 515 | 497 | 478 | |
| Transportation equip., except autos | 629 | 653 | 673 | 665 | 672 | 663 | |
| Furniture and fin. lumber products | 261 | 274 | 268 | 259 | 249 | 243 | |
| Stone, clay and glass products | 166 | 189 | 185 | 180 | 178 | 173 | |
| Other durable goods | 184 | 197 | 197 | 194 | 186 | 184 | |
| Nondurable goods | 277 | 278 | 274 | 270 | 267 | 263 | 260* |
| Food and kindred products | 240 | 220 | 205 | 195 | 191 | 193 | |
| Textile-mill products (excl. apparel) | 262 | 264 | 257 | 254 | 243 | 245 | |
| Leather and products | 258 | 264 | 260 | 277 | 269 | 263 | |
| Paper and allied products | 311 | 312 | 301 | 300 | 300 | 289 | |
| Chemicals and allied products | 282 | 288 | 286 | 277 | 264 | 259 | |
| Petroleum and coal products | 214 | 234 | 240 | 244 | 244 | 246 | |
| Rubber products | 287 | N.A. | N.A. | N.A. | 295 | N.A. | |
| Other nondurable goods | 407 | 384 | 372 | 376 | 391 | 386 | |
| **Indexes of Value of New Orders (Average Month 1939 = 100)** | | | | | | | |
| All industries | 251 | 218 | 196 | 202 | 208 | 192 | N.A. |
| Durable goods | 287 | 245 | 209 | 206 | 215 | 191 | N.A. |
| Nondurable goods | 230 | 202 | 187 | 200 | 204 | 193 | N.A. |

Source — Department of Commerce, Revised Series

*Estimated
N. A. — NOT AVAILABLE

## SALES, INVENTORIES AND INDUSTRIAL PRODUCTION



# Straws in the Trade Wind

● Negotiations are under way with three major steel companies for the erection of plants in New Jersey, according to an announcement by Alfred E. Driscoll, Governor of the state. The companies are United States Steel Corporation, Jones & Laughlin Steel Corporation, and Republic Steel Corporation. Governor Driscoll said the discovery of new sources of raw material in Labrador and South America give New Jersey, a seaboard state, advantages over inland states.

● A bill authorizing an $80,000,000 program to step up finding and conserving of critical metals has been approved by the House Public Lands Committee and efforts were being made to have the bill passed before the adjournment of Congress.

● The first British "Productivity Team" to visit the United States and make a study of this country's industrial methods has found that productivity in American foundries is from 50% to 90% greater than that in Great Britain. The report of the group, which was composed of 16 British steel foundry men, representing both labor and management, declared that restrictive trade practices, unprogressive industrial policies and wasteful production methods of British industry were responsible in good part for its failure to match United States in efficiency and production.



● The House has approved a bill calling for the Government to advance $100,000,000 to states and local governments to assist them in planning public works projects as a hedge against a future depression. The Senate recently passed a similar measure. It is estimated that the sum would allow planning for $3,000,000,000 in public works projects.

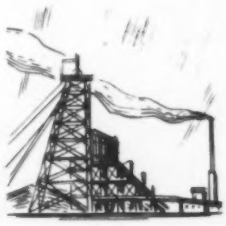
● Industrial output of western Europe in the second quarter of 1949 reached a postwar peak 14% above the corresponding period of 1948, and 17% greater than prewar, according to a bi-monthly report of the Economic Cooperation Administration. It pointed out that "industrial bottlenecks have almost everywhere disappeared", and that "the inflation threat seems to have been definitely overcome". The report said, however, that there had been a shift away from exports to the hard currency areas with more exports going to the soft currency countries, and that the volume of trade among participating countries lagged despite the substantial progress made since early 1948.

● Despite expectations of a decline because of impending devaluation, imports into the United States in August increased $35,000,000 to the $490,600,000 mark, as compared with $455,600,000 in July. The increase was largely in the field of raw materials. United States exports in August dropped $16,100,000 to $880,500,000. Imports for the period were 13% below the average for the first half of 1949, and 17% below the 1948 monthly average. Exports declined 21% below the average for the first half of 1949, and 16% below the monthly average for 1948.

● A report by the Securities and Exchange Commission and the Federal Trade Commission reveals that profits for American manufacturing corporations declined by $393,000,000 in the second quarter of 1949 to a total of $2,018,000,000. The total figure was $845,000,000 below that of a similar period in 1948.

● Installment plan credit hit a new record high of $9,613,000,000 at the start of September, according to the Federal Reserve Board, a rise of $282,000,000 over the beginning of August. The biggest increase in installment credit was made on automobile purchases.

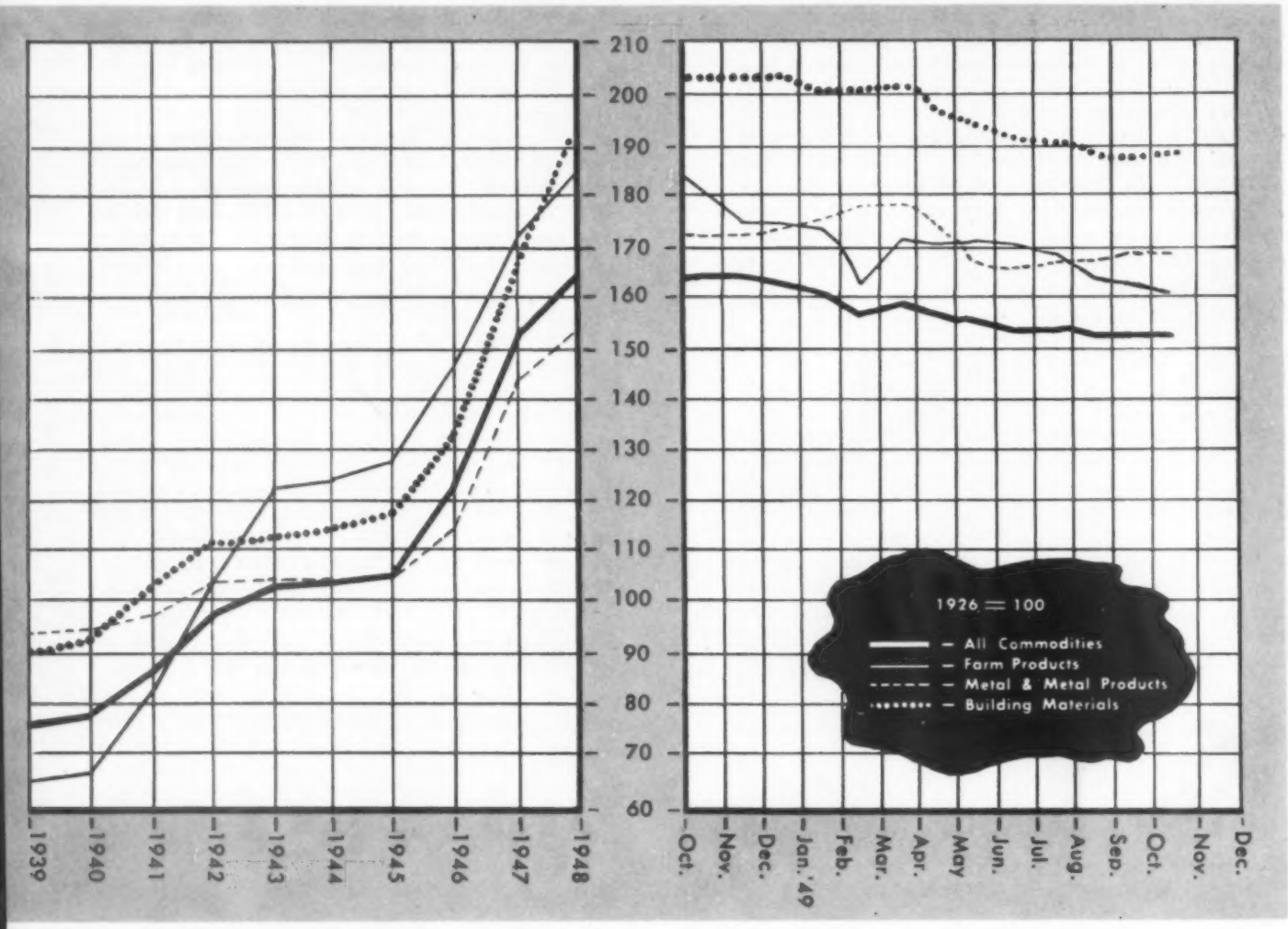
● Business loans increased for the ninth consecutive time during the week of October 5, according to the Federal Reserve Board. The increase reached $50,000,000 and brought the total of commercial, industrial and agricultural loans to $13,434,000,000.



● An estimated annual flow of 56,000,000,000 cubic feet of natural gas from Texas to the Michigan-Wisconsin area was scheduled to begin over a 1,609-mile pipeline about November 1. Work on the line began in 1947, and was completed 7 months ahead of schedule. Michigan Consolidated Gas Co., owners, say the fields in which the line originates have an annual capacity of 108,000,000,000 cubic feet, and the company plans to petition the Government immediately for an increase in the initial limit.

● Construction costs should continue to decline gradually in 1950, as the buyers' market, continues, Thomas S. Holden, president of the F. W. Dodge Corporation, recently told the annual fall meeting of the Producers' Council. He also said that, in general, he expects the year's volume of public building and engineering work to increase somewhat over 1949, and the total volume of private construction to decline moderately.

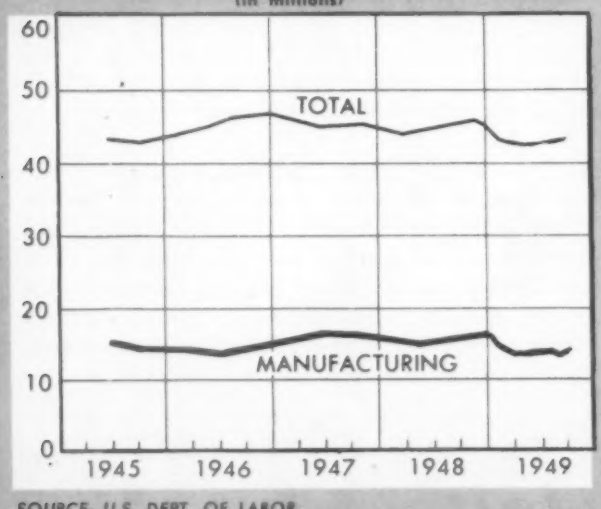
# The Price Picture




# Employment & Earnings

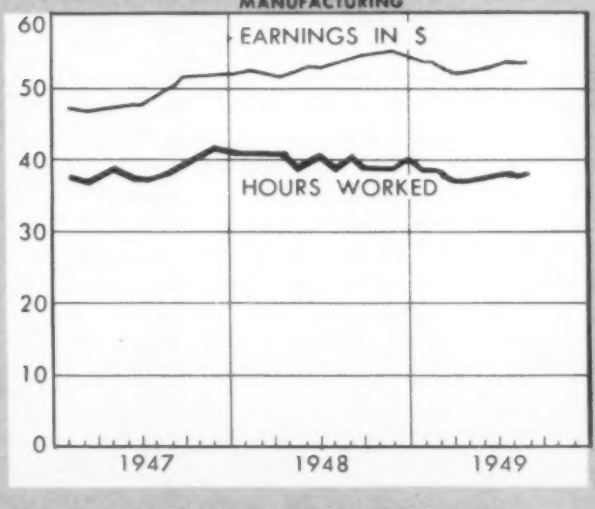
## NON-AGRICULTURAL EMPLOYMENT

(in millions)




## AVERAGE WEEKLY EARNINGS AND HOURS

MANUFACTURING




SOURCE: U.S. DEPT. OF LABOR

# The Pulse of Business

As the probable shattering effects of long strikes in the basic steel and coal industries became more apparent, people generally seemed to be almost frantically hopeful that somehow or other a solution would shortly be worked out. Yet, as this was written, the principals were bluntly and publicly standing firm in the positions they had taken a month before. And almost as if to emphasize its determination, the steelworkers' union called out on strike its 20,000 members in the Aluminum Company of America, although the issues over pensions were somewhat different from those in the steel industry.

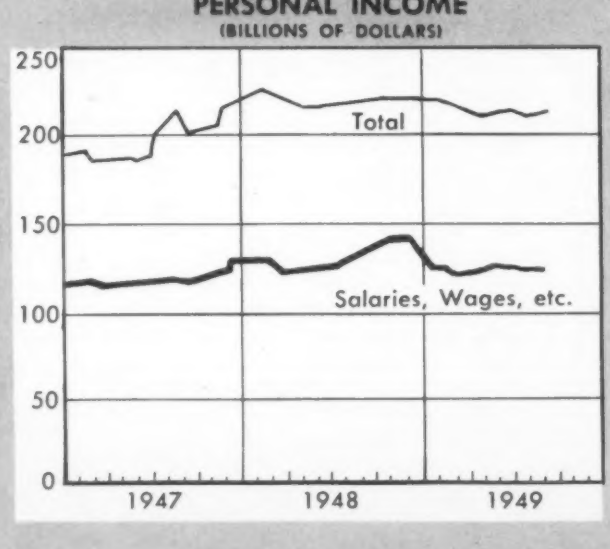
The result of prolonged strikes in these three industries alone could be a kind of economic paralysis — or perhaps a galloping one. Drastic reductions in employment in such mass-production industries as the automotive, metal container, machinery, electric appliance and construction industries were predicted by Secretary of Commerce Sawyer. He said that if the strike continues to December 1, unemployment directly attributable to it will be 5,000,000. By January 1, he added there will be, in effect, a complete shut-down in the metal consuming industries. Such a situation in itself is bad enough, it has been pointed out, but an even greater danger lies in the reports that many small firms will be forced to close their plants if their ordinarily frequent steel-inventory replacements do not become available before November 15, because they will not have the capital to reopen.

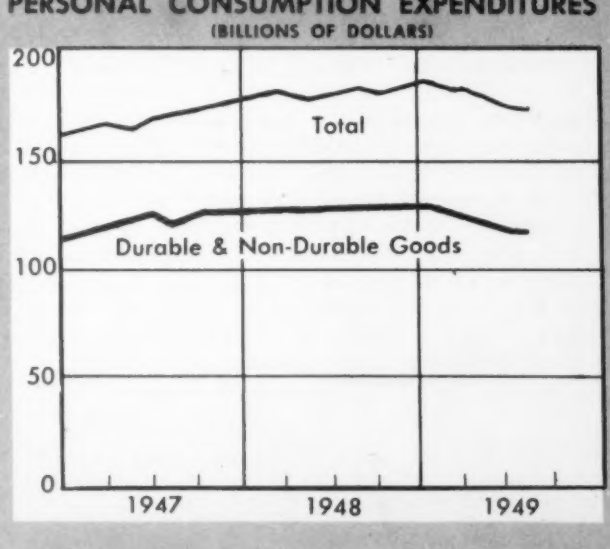
Up to the time of the steel strike, business prospects for the final quarter of the year were being viewed with a good deal of satisfaction. The upswing that got underway in late summer continued through September, as evidenced by the industrial production index which has gradually climbed to an estimated 171 after getting down in July to close to 160, a postwar low. According to the latest figures available, nonagricultural employment advanced sharply in August as a result of the expansion of industrial activity. Even making allowances for seasonal factors, the trend was a hopeful one, and it was expected that figures up to the steel strike would indicate that it was continuing. The improvement shown in late-summer sales of manufacturers, wholesalers, and retailers appeared to be continuing, as was the trend in inventory liquidation.

The big factor in determining the course of business, the consumer, is apparently still in a good position, and ready to keep spending his money on durable goods, provided "the price is right". The Federal Reserve Board, in a study of consumer finances made in July, found that consumers were still "generally optimistic" about their own incomes and about the state of business, and going ahead with plans to buy automobiles, radios, refrigerators, washing machines, television sets, homes, etc. in the period from July, 1949 to June 1950. Personal income, too, remains at a relatively high rate, having reached the $211,500,000,000 mark in August, a billion and a half jump over July, and only slightly below the monthly average for all of 1948.

It is generally felt that with this background, business can take a reasonably bright view of things for at least the next four to six months. But continued strikes by at least three quarters of a million wage earners, and the resultant reduction in other employment and purchasing power may change the picture quite violently.

## *Personal Income & Expenditures*



# Materials & Markets

## STEEL



Approximately 4,200,000 net tons of ingot production had been lost by the end of the third week of the steel strike, according to the American Iron & Steel Institute. Operations for the week beginning October 17 were scheduled to be at 9.3% of capacity, equal to production of 172,000 tons.

Because of the apparently widespread assumption that the strike would be settled by the end of October, probably by Presidential intervention, concern over supplies, at least among the larger users, seemed to center not so much on the immediate situation, but on the problem of inventory replenishment once the steel mills got back into operation. Reserves at this writing appeared to be in comparatively good shape, but it was certain that before long a big backlog of orders would begin to build up. The several weeks required for the industry to get back into full production would then result in a pinch in supplies. If the strike lasts for only a month, the estimated loss in production would be somewhere around 6,000,000 tons, a rather large chunk to be taken out of circulation in the face of increasing demand.

Reports that gray market activity in steel had reappeared and that a system of priorities and allocations would be asked by the Government were being heard but at the time this was written there was little substantiation for them. If the strike is not settled within the next few weeks, however, it seems sure that such developments will ensue.

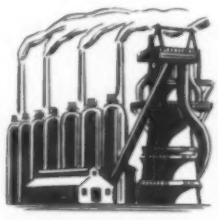
The widely held belief that however the strike is settled, the companies will end up by paying the bill in the form of increased pensions and other benefits, makes it necessary to reemphasize the possibility of price increases. In addition to the added burden of pensions, which led one producer who signed with the union to increase the price of steel plates by $5 a ton, the companies are faced with the large financial losses of a prolonged strike. Another significant note is that scrap prices have remained comparatively firm in spite of the strike. It is believed that they will stay up as long as there is hope of an early settlement, which will boost demand for scrap considerably.

## NON-FERROUS METALS

Demand for aluminum started to pick up in the latter part of the summer and early September as users began replenishing the inventories that had over-expanded in the spring and let fall too low in the summer. Indicative of the changed situation is the latest report of the N.A.P.A. Business Survey Committee, which indicates that aluminum is in tight supply. Another sign is the return to production in early October of two pot lines at the Jones Mills, Ark. plant of the Reynolds Metals Company, attributed by the company to a "sharp pickup in demand for aluminum". That increased demand was further augmented by the steel strike, which led many steel users to turn to aluminum as a substitute.

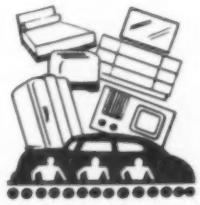
A strike called at nine plants of the Aluminum Company of America at mid-month threw a shadow over the picture, although it was generally felt that it would have to last 3 weeks to a month to disrupt the current supply-demand situation. Production in the affected plants amounts to about one quarter of the country's total, but it was understood that the company had relatively large stockpiles that could act as a buffer to at least a short strike.

The increased demand, and what losses develop from the strike will probably keep the aluminum price level firm for some time to come, barring a general breakdown in the economy because of the steel strike. Any hope of reduced prices on Canadian aluminum because of devaluation of the Canadian dollar were put aside by the announcement of the Aluminum Company of Canada that it was maintaining its price of 16¢ a pound.



Copper demand has been rising sharply in the past two months and indications are that this movement will continue, unless the steel strike throws the whole industrial machine out of kilter. According to figures of the Copper Institute, stocks of domestic refined copper dropped by 23,277 tons in September for the first time this year. Deliveries to customers totalled 103,115 tons as compared with 90,739 tons in August. The current price of 17⅝ cents a pound has remained firm since last month, but rising demand and rumors of increased Government stockpiling has led some quarters to the belief that a price rise is due — assuming again, of course, that the steel strike ends without serious effects on industry at large.

Under pressure of increased imports and a lower demand than existed the previous month, lead prices dropped four times until they reached a level of 13¢ a pound in mid-October. It is felt in trade circles, however, that this weakness is only temporary and that lead will not be in excess supply as long as industrial activity maintains its present pace.



Zinc prices, practically ready to head upward because of heavy demand and a scarce supply condition just before the steel strike, dropped ¾¢ a pound shortly after the strike occurred. Galvanizing is estimated to use about 40% of zinc produced in this country, and with the steel plants shut down demand fell off heavily.

## *FUELS*

Faced by what one representative calls a "terrible competitive battle" with oil and gas, the coal industry has voiced its determination to fight John L. Lewis' contract demands that would raise production costs from 25 to 35 cents a ton. The same representative said that if costs are increased further many mines will be unable to open because the public will not pay any more for coal. Stocks above ground appear to be sufficient for industry's needs for a few weeks to come, but a definite pinch is expected if the strike in all bituminous fields east of the Mississippi continues much longer.

The Independent Petroleum Association of America has predicted that the daily demand for petroleum liquids in the October-March period will average 6,170,000 barrels, 400,000 barrels a day more than was required in the same period a year ago. This demand had been slow in shaping up, but the coal strike and the onset of winter have given it new impetus. Because supply facilities are not sufficient to handle this volume, provided it could be produced, it has been predicted that there may be some tightness in supply this winter... Esso Standard Oil Company increased its selling prices of No. 6 heavy fuel oil by 15 cents a barrel at all terminal points from Maine to Louisiana, on the basis of improved demand for the fuel in east coast and gulf markets. The company said the higher price was necessary to bring out additional supplies, since previous prices were unprofitable and most companies had put curbs on runs of crude oils of the type which gives high residual yields.

# "QUOTES"

"Under the whiplash of government, men will produce only what they have to, and under socialism only what the bureaucrats think they ought to have. But spurred by the competitive struggle for profits—the wine of fair rewards — men will produce as well and as much as they are able to."

—Morris Sayre, President
Corn Products Refining Co.

"Business men, and most other average citizens, are open to criticism on another ground. As a nation we are in danger of becoming a coterie of pressure groups, each with a special axe to grind, disregarding the common, long-range good. We are a nation of joiners, and our identifications with special groups within the total community are as much evils as they are blessings."

—Richard Weil, Jr.
President, R. H. Macy & Co.

"Some of the labor organizations that have been cursing the (Taft-Hartley) law . . . primarily . . . because of its injunction features were among the first to demand that the General Counsel exercise his discretion and seek injunctions in their behalf. Apparently, it is very much a question of whose ox is being gored."

—Robert N. Denham
General Counsel, N.L.R.B.

"We must regard unnecessary duplication and waste as very real enemies of our national security, because excessive military expenditures could contribute to such dangerous requirements as deficit financing, and the latter could well lead to economic collapse — a self-inflicted injury which might well be just as harmful to our way of life as defeat in battle."

—W. Stuart Symington
Secretary of the Air Force

"In all history no community has ever been helped and kept by gratuitous aid — that is, by the labor of other hard-working peoples — to anything approaching the degree with which we have been under the present Socialist Government. Where is the end of it?"

—Winston Churchill

"We don't want the Government to tell us what to do, and we would be very glad if the Government would keep its paws off us."

—F. A. Martin, chairman of
British steel group visiting
U. S. mills

"Our job is not to sell the enterprise system, but to put some enterprise into the selling system. We cannot sell the American system merely by telling the people how good it is. The proof of any product is in its performance. The only way to convince people that the American system is good is to make it work for them."

—Stanley Marcus
Executive Vice-President
Neiman-Marcus

# PAPER OUTLOOK ONE OF STABILITY

The paper and paperboard markets, viewed by many as good indices of general business conditions, have recently shown definite evidence that they are moving into a period of relative stability. Like most industries that have been affected by the impact of such unprecedented factors as the war, the tremendous growth in population, and the feverish activity of the postwar business boom, the paper industry has experienced a number of rather violent movements in the past several years. Because the movements were extreme, and based on situations which did not afford true historical comparisons, it was difficult to see where the industry, which combined with the pulp industry ranks sixth in the United States in terms of value of products, was headed. Today the outlook appears to be clearer than at any time since the war.

Production of all types of paper, as shown in the first column of the accompanying chart (only representative types are shown in adjoining columns), oscillated somewhat in the years 1936-39 and then began a strong upward movement that continued with relatively minor variations throughout the war years. Following the war, as the country moved into a period of intense productive effort, paper production boomed right along with the other industrial leaders. By the end of 1948 paper and board production had hit the all-time high figure of 21,921,757 short tons, 805,757 tons over the previous record, set in 1947.

Production of both paper and board began dropping in January, 1949 and continued the descent until July. In that period production of paper (not including newsprint) fell in gradual but definite steps from 94.6% of estimated capacity to a low for the year of 72.2% (July). Production of paperboard went from 88% to 64% in the same time. These July figures were considered abnormally low, even during a seasonally dull month.

July, however, was a turning point, and the production curve turned upward with a big spurt in August and rose gradually thereafter. August production of paper and board was 1,758,000 tons, the highest overall monthly production of the year to that date, and 30% higher than the July low. Production of paper was at 88% of capacity for the month, while that of paperboard was at 86%. Since that time, the percentage figures have continued to rise. For the week ending October 8, according to the American Paper & Pulp Association, paper production was at 96.7% of estimated capacity, and that of paperboard at 92% of estimated capacity.

Indications are that production will continue at this high rate for the balance of the last quarter. The year's total is expected to be below that of 1948, but considerably higher than might have been anticipated during the deep slide six months ago.

### What's Behind the Figures?

The lowest point of the year in paper production just about coincided with the peak of the spring and early summer "recession" indicating that paper buyers were holding off on new purchases and working on reduction of inventories. This reluctance to make commitments was coupled with the traditional seasonal slackness to produce an extremely dull market. The high sensitivity of the paper market to general business conditions manifested itself, however, during the middle of August when industrial activity began picking up and preparations for the fall season were being made. Paper buyers, in many cases, dangerously low on inventories, and convinced that the decline in prices they had been anticipating had reached the limit, reentered the market in strength.

**PRODUCTION OF PAPER IN U. S.**
(in thousands of short tons)

| YEAR | ALL TYPES | BOOK PAPER | FINE PAPER | COARSE PAPER | NEWS-PRINT | PAPER BOARD |
|---|---|---|---|---|---|---|
| 1936 | 11,976 | 1,438 | 628 | 1,879 | 938 | 5,455 |
| 1937 | 12,837 | 1,521 | 603 | 2,053 | 976 | 5,802 |
| 1938 | 11,381 | 1,307 | 532 | 1,866 | 832 | 5,104 |
| 1939 | 13,510 | 1,535 | 723 | 2,239 | 954 | 6,025 |
| 1940 | 14,484 | 1,656 | 735 | 2,501 | 1,056 | 6,379 |
| 1941 | 17,890 | 2,026 | 950 | 2,605 | 1,044 | 8,528 |
| 1942 | 17,084 | 1,704 | 1,055 | 2,777 | 967 | 7,969 |
| 1943 | 17,036 | 1,593 | 1,021 | 2,262 | 811 | 8,620 |
| 1944 | 17,183 | 1,436 | 974 | 2,314 | 721 | 8,963 |
| 1945 | 17,371 | 1,501 | 1,001 | 2,403 | 725 | 8,914 |
| 1946 | 19,278 | 1,933 | 1,160 | 2,690 | 773 | 9,490 |
| 1947 | 21,114 | 2,208 | 1,172 | 2,903 | 833 | 9,186 |
| 1948 | 22,049 | 2,338 | 1,141 | 3,024 | 876 | 9,369 |

Source: Department of Commerce

The renewed demand is expected to continue at least to the end of the year, barring a wide economic upheaval. Under its pressure production moved steadily up and prices on all types started to firm. Orders for some types have mounted to a point where mills are either rejecting them or giving delivery dates that range up to 6 to 8 weeks ahead. Such conditions have been particularly reported in the kraft paper and paper bag fields.

Prices on all types of paper — with the possible exception of kraft — apparently have stabilized and only minor, if any, variations are expected in the near future. Kraft prices moved up under heavy demand in August, in September and again in October. A heavy factor working against lower prices in paper generally is the firmness in pulp prices that has developed for the fourth quarter. According to trade reports it is not expected that devaluation will result in revision of prices on Scandinavian pulp.

With the next few months indicating a sustained demand, a high rate of production, and a firm price picture, the paper industry appears to have come through its postwar "readjustment" period in good shape. Assuming no deep ill effects from strikes in basic industries, the outlook is one of strong, steady activity, with no strong fluctuations or sudden changes.

# Plenty for Nothing

**The world's best statistical service is yours for the asking.**

**Government information services should be more widely used, not curtailed.**

**How to locate and secure specific data on your business problem.**

•

***By Grey Leslie and John Shute***

(Chart by Fritz Leslie)

TODAY, the rewards of higher profits and greater efficiency in purchasing, production, and management are afforded largely to those executives who are alert to wide sources of useful business information and who take full advantage of them. It is such information that makes for intelligent decisions, not only in the necessary long-run planning which confronts purchasing agents and executives, but also in relation to hundreds of day-to-day problems.

There is available to the American businessman probably the greatest wealth of cost-saving data and general economic information in the world. Much of this information is free and none of it is expensive.

That source is the United States Government.

For many years many of our great industrial concerns and selling organizations have made excellent use of this material. But, generally, the medium and smaller-sized establishments have neglected full exploitation of this profit-fostering data, much of which is prepared especially for their use.

The output of Government information which is of interest to business falls into two broad categories; (a) the continuing reports, and (b) the special studies. In carrying on its formal functions, the Federal Government more or less automatically acquires a vast collection of information. In many instances it is only the Federal Government that possesses the authority and the means to insist on getting it. For example, the function of tax collection incidentally produces considerable data which are of immense value to the marketing expert in the analysis of likely sales areas. In similar fashion, the Bureau of the Census, the original function of which was to provide data relevant to the allocation of Congressional representation, collects data without which all forms of business would be seriously handicapped.

In addition to the procurement of such information, which, at least originally, was incidental to the normal activities of government, certain departments have specific instructions from the Congress to collect and make available material of value to business. A large part of the activities of the Department of Commerce fall into this class.

The failure of many business establishments to make better use of Government information may be explained on several grounds. (1) Ignorance of the existence of data that would be helpful in the conduct of business. (2) Ignorance of how to obtain such data. (3) Lack of analytical skill in the use and application of the information in the form in which it is published.

In some instances, it must be admitted, there is a rather childish resentment toward such government data, based upon the feeling that the government could not possibly know anything of real value about business enterprises except how to tax them. Such an attitude can be characterized as naive since many of these same businessmen frequently make use of some costly advisory "services" which rely largely on government-procured data and make complete use of the identical government documents. The instinct of suspicion toward what can be had for nothing may be working overtime here.

### *Primary Sources*

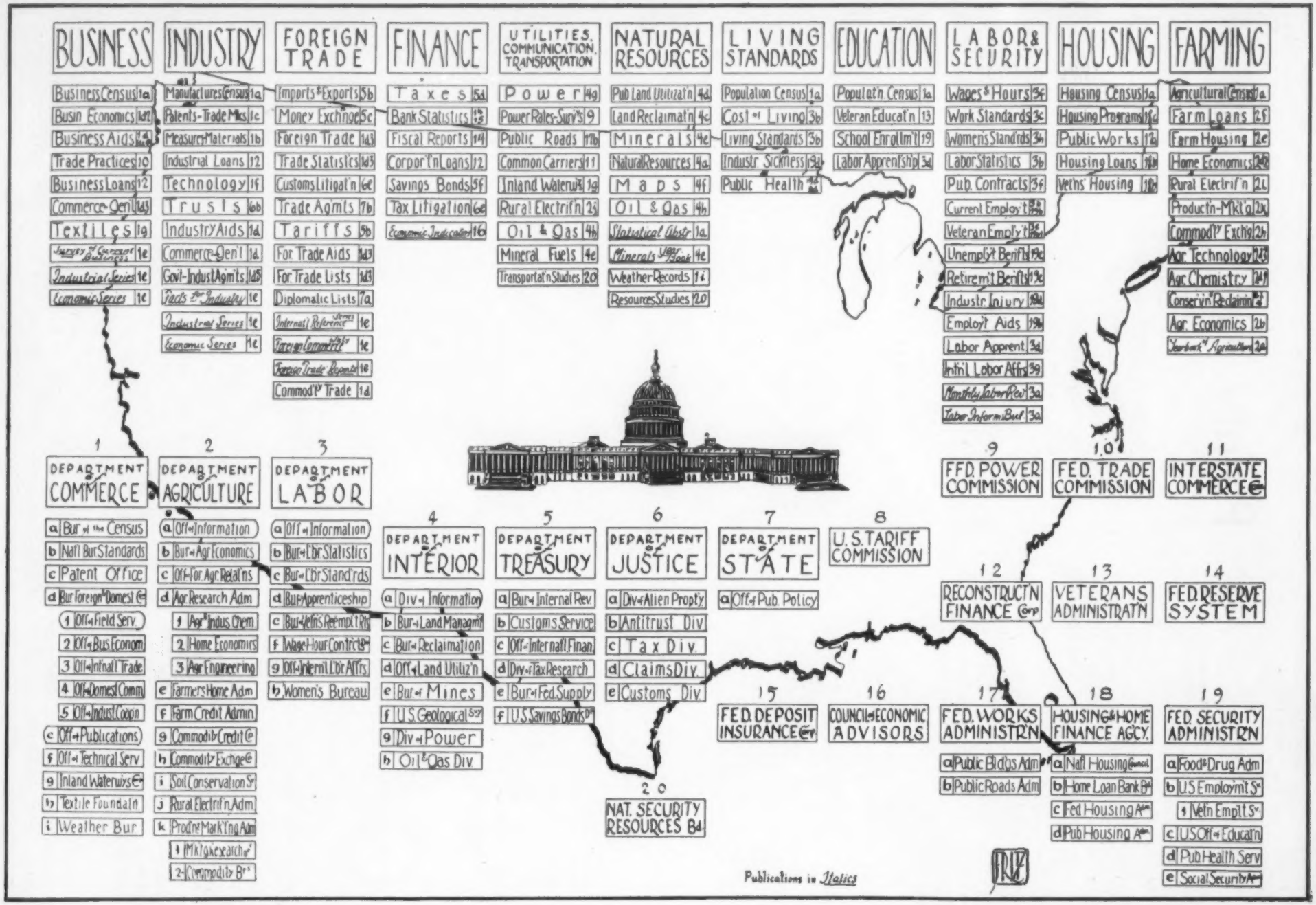
The Department of Commerce is, above all else, the agency of government especially intended to help American business, ". . . to foster, promote and develop the foreign and domestic commerce, the mining, manufacturing, shipping, and fishing industries, and the transportation facilities of the United States". In addition to its direct business fostering functions, the Department includes such related activities as the Patent Office, the Bureau of Standards, the Bureau of the Census, the Civil Aeronautics Administration, and several others.

According to the act establishing the Department of Labor, ". . . the purpose of the Department of Labor shall be to foster, promote, and develop the welfare of the wage earners of the United States, to improve their working conditions, and to advance their opportunities for profitable employment." While its primary activities are of special value to wage earners as a class, it collects and publishes much information of incalculable value to business, large and small. Its statistics on wage rates, unemployment, the cost of living, ocupational outlook and kindred subjects are of obvious importance.

The Department of the Interior is charged, rather inclusively with ". . . advancing the domestic interests of the people of the United States." Its many bureaus, such as the Bureau of Mines, the Oil and Gas Division, the Geological Survey, etc., produce information of inestimable use to a great variety of businesses.

While the Treasury Department is essentially responsible for managing the finances of the Government, the by-products of its activities are frequently of profit to many business specialists. Thus, the regional data on income tax returns are most effectively used in various market surveys.

At first glance the Department of Agriculture and its manifold operations may seem remote from the area of business interests. In many ways however, this Department publishes


BUSINESS
INDUSTRY
FOREIGN TRADE
FINANCE
UTILITIES, COMMUNICATION, TRANSPORTATION
NATURAL RESOURCES
LIVING STANDARDS
EDUCATION
LABOR & SECURITY
HOUSING
FARMING
Business Census 1a
Busin Economics 1d
Business Aids 1g
Trade Practices 10
Business Loans 12
Commerce Gen'l 14a
Textiles 19
Industrial Series 1e
Economic Series 1e
Manufactures Census 1a
Patents-Trade Mks 1c
Measures-Materials 1b
Industrial Loans 12
Technology 1f
Trusts 6b
Industry Aids 1d
Commerce Gen'l 1a
Govt-Indust Agm'ts 14b
Facts for Industry 1e
Industrial Series 1e
Economic Series 1e
Imports & Exports 5b
Money Exchange 5c
Foreign Trade 14a
Trade Statistics 16a
Customs Litigat'n 6c
Trade Agm'ts 7b
Tariffs 5b
For Trade Aids 14a
For Trade Lists 16a
Diplomatic Lists 7a
Internat'l Reference Series 1e
Foreign Commerce 1e
Foreign Trade Reports 18
Commod'y Trade 14a
Taxes 5a
Bank Statistics 15
Fiscal Reports 14
Corpor'n Loans 12
Savings Bonds 5f
Tax Litigation 6c
Economic Indicators 16
Power 14g
Power Rates-Surv's 9
Public Roads 17b
Common Carriers 11
Inland Waterw'ys 19
Rural Electrif'n 21
Oil & Gas 14h
Mineral Fuels 14e
Transportat'n Studies 20
Pub Land Utilizat'n 14d
Land Reclamat'n 14c
Minerals 14e
Natural Resources 14a
Maps 14f
Oil & Gas 14h
Statistical Abstr 1a
Minerals Year Book 14e
Weather Records 14i
Resources Studies 20
Population Census 1a
Cost of Living 3b
Living Standards 3b
Industr Sickness 19d
Public Health 24a 24d
Popular'n Census 1a
Veteran Educat'n 13
School Enrol'm't 19
Labor Apprent'ship 3d
Wages & Hours 3c
Work Standards 3c
Women's Standrds 3h
Labor Statistics 3b
Pub Contracts 3f
Current Employ't 23a 23b
Veteran Emply't 23d
Unemplo't Benfts 19c
Retirem't Benfts 19c
Industr Injury 19d
Employ't Aids 19b
Labor Apprent 3d
Int'n'l Labor Affrs 39
Monthly Labor Rev 3a
Labor Inform Bul 3a
Housing Census 1a
Housing Programs 17c
Public Works 17a
Housing Loans 16b
Vet'ns' Housing 16b
Agricultural Census 1a
Farm Loans 12f
Farm Housing 12e
Home Economics 24a
Rural Electrif'n 21
Product'n-Mkt'g 21x
Commod'y Exch'g 21h
Agr. Technology 24a
Agr. Chemistry 24f
Conserv'n-Reclamn 21
Agr. Economics 21b
Yearbook of Agriculture 21a
1 DEPARTMENT COMMERCE
a Bur of the Census
b Nat'l Bur Standards
c Patent Office
d Bur Foreign & Domest Com
1 Off of Field Serv
2 Off of Bus Econom
3 Off of Internat'l Trade
4 Off of Domest Comm
5 Off of Indust Coopn
e Off of Publications
f Off of Technical Serv
g Inland Waterways Corp
h Textile Foundatn
i Weather Bur
2 DEPARTMENT AGRICULTURE
a Off of Information
b Bur of Agr Economics
c Off for Agr Relations
d Agr Research Adm
1 Agr Indus Chem
2 Home Economics
3 Agr Engineering
e Farmers Home Adm
f Farm Credit Admin
g Commodity Credit Corp
h Commodity Exchange
i Soil Conservation Serv
j Rural Electrif'n Adm
k Prod'n & Mark'ting Adm
1 Mkt'g Research
2 Commodity Br's
3 DEPARTMENT LABOR
a Off of Information
b Bur of Lbr Statistics
c Bur of Lbr Stand'rds
d Bur Apprenticeship
e Bur Vet'ns Reemploy Rts
f Wage-Hour Contr'ts
g Off of Internat'l Lbr Affrs
h Women's Bureau
4 DEPARTMENT INTERIOR
a Div of Information
b Bur of Land Managmt
c Bur of Reclamation
d Off of Land Utiliz'n
e Bur of Mines
f U.S. Geological Surv
g Div of Power
h Oil & Gas Div
5 DEPARTMENT TREASURY
a Bur of Internal Rev
b Customs Service
c Off of Internat'l Finan.
d Div of Tax Research
e Bur of Fed. Supply
f U.S. Savings Bonds Div
6 DEPARTMENT JUSTICE
a Div of Alien Prop'ty
b Antitrust Div
c Tax Div.
d Claims Div.
e Customs Div.
7 DEPARTMENT STATE
a Off of Pub. Policy
8 U.S. TARIFF COMMISSION
9 FED. POWER COMMISSION
10 FED. TRADE COMMISSION
11 INTERSTATE COMMERCE Com
12 RECONSTRUCT'N FINANCE Corp
13 VETERANS ADMINISTRATN
14 FED. RESERVE SYSTEM
15 FED. DEPOSIT INSURANCE Corp
16 COUNCIL OF ECONOMIC ADVISORS
17 FED. WORKS ADMINISTRN
a Public Bldgs Adm
b Public Roads Adm
18 HOUSING & HOME FINANCE AGCY.
a Nat'l Housing Council
b Home Loan Bank Bd
c Fed Housing Adm
d Pub Housing Adm
19 FED. SECURITY ADMINISTRN
a Food & Drug Adm
b U.S. Employm't Serv
1 Vet'n Empl't Serv
c U.S. Off of Educat'n
d Pub Health Serv
e Social Security Adm
20 NAT. SECURITY RESOURCES Bd
Publications in Italics

**The chart on the opposite page is designed to give some idea of the scope and variety of Government aids to business and industry and the sources of information and publications readily available. The upper half indicates specific branches of the national economy, and is indexed to key with the specific departments serving them. The Government Departments are numbered 1 to 20 in the lower half of the chart, with letter symbols showing detailed services.**

data of general value to all business and of basic importance to certain types of business and industry. Its crop reports directly affect the scheduled operations of millers and other processors and, indirectly, the myriad users of agricultural industrial products such as paints, soaps, textiles and appliances. The Department's monthly data on prices can be a valuable tool to both purchasing and marketing specialists.

In addition to these five major departments of government there are many other Federal Agencies which compile and distribute the types of information which play an essential role in the efficient operation of a successful business enterprise.

One vital advantage in the use of Governmental data is that it enables the individual businessman to see his position in terms of what others are doing in the same field. Obviously, this can also be done the hard way—after sales have been falling for six months, one can discover that potential purchasers have heavy inventories. It is at least a contribution to the conservation and proper direction of effort if this same information could be discovered earlier, and by observation of statistics, rather than of crowded warehouses and over-stocked inventory commitments. This point is valid not only with respect to those with whom business must be transacted, it is equally significant for those who are competitors. A 20% increase in sales may be a sign of impending disaster if competitors' sales are up by 40%. In general then, the use of Government information should be evaluated not only in terms of the firm's internal efficiency, i.e. wise purchasing, production at low cost, and effective marketing, but beyond this, in terms of the position of the industry as a whole.

### *Data for Purchasing*

For most businesses, most of the time, the really current market price of materials is of limited importance. For the bulk of all firms the fact of genuine significance is today's price in relation to those of tomorrow, a week, a month, or three months hence, or, in other terms, the trend of prices. The interaction of an experienced mind, an intimate knowledge of a business, and a fund of relevant Government information, can usually produce adequate judgments as to short run price trends. The first two qualities without the Government information will not produce these results.

The Department of Commerce publishes production data for a wide variety of industries. Sales and inventory information are available from the same source. The Department of Agriculture has the probable production figures for agricultural items. These data, together with the general evaluation given in the Federal Reserve Bulletins, may form the basis for reliable price estimates. Much of this invaluable material is available in a single source, the monthly "Survey of Current Business" of the Department of Commerce. This same Department has periodic data on dollar volume of business, new orders, volume of inventories, collections, credits, rate of movements of stocks, etc. If mineral products or petroleum are of consequence in purchases, then the publications and resources of the Bureau of Mines, or of the Oil and Gas Division, of the Department of the Interior should be investigated.

The Department of Commerce maintains an exhaustive register of foreign sources of commodities and of the companies and individuals who deal in these commodities. If the volume of such activity is sufficient, a subscription to the "Foreign Commerce Weekly" would be of incalculable value.

Difficult questions of standards in purchasing frequently may be resolved through reference to the National Bureau of Standards of the Department of Commerce. In many instances the Federal Trade Commission or the Food and Drug Administration (of the Federal Security Agency) are able to supply pertinent information.

In describing the wealth of Governmental business information in terms of the functional aspects of business, there is danger of overlooking the material which cuts across all the functional activities of a particular type of business. Examples of this variety of information stagger all attempts at brevity. For small business there are, for example, some forty odd booklets dealing with the establishment and operation of everything from a metal working shop to a weekly newspaper. All are published by the Department of Commerce, and the most expensive is 70 cents.

In this same area, but at a much different level, are the periodic reports relating to special industries. These reports, issued by Commerce, consider almost everything of significance on the purchasing, production, distribution, and consumption of the products involved. At the present time these reports are being issued for nine major industries: Chemicals, and Drugs; Fats and Oils; Sugar, Molasses and Confectionery; Coffee, Tea, and Spices; Leather; Pulp and Paper; Lumber; Canned Fruits and Vegetables; and Rubber. Again the prices are modest, $2.50 being the maximum annual subscription.

In this same class of industry-wide integrated information is that produced by the Textile Foundation, Inc., a quasi-government corporation which is connected with the Department of Commerce. This corporation studies all aspects of the textile industry and has issued such valuable publications as "Inventory Policies in the Textile Industry", "Management of a Textile Business", "Marketing Textiles", etc., etc.

A wealth of Federal data is available relative to the problem of plant location. This same material is pertinent to the evaluation of the relative efficiency of existing plants. The Department of the Interior has topographical maps of all sections of the United States and has useful statistics on water supply. Information pertaining to climate is available through the Weather Bureau. The Federal Power Commission publishes power rates and has other data on generating capacity.

Together, the Bureau of the Census and the Bureau of Labor Statistics can supply any conceivably useful statistics on labor supply, unemployment, skills, wage rates, cost of living, labor contracts, and in general, everything that has to do with labor. Within the Department of Commerce is the Municipal Ref-

erence Service, which is the authority on local finance, local taxation, etc.

### *Technical and Economic*

As special problems arise under the broad classifications of purchasing and production, consideration of new and more efficient methods of purchasing and production and of new products are worthy of particular attention. From this point of view the Office of Technical Services of the Department of Commerce is a most valuable source. From enemy and ex-enemy countries, the Office has compiled technical data on processes and products which are new to American technology. The publications of the Office are available to all at nominal prices. Also within Commerce, the Patent Office compiles and publishes a register of inventions which are for sale or license. An occasional examination of the Patent Office Gazette offers stimulating suggestions to those concerned with the technical aspects of production.

Apart from these sources of general technical information many of the departments and agencies issue contributions to the particular technological problems under their purview. Thus for example, the Department of Agriculture has, to cite one of thousands of studies, done basic research on the storage of perishables. This is of interest not only to the buyers of perishables but also to the sellers of the materials and equipment for the storage facilities.

To the majority of businessmen perhaps the most useful contribution made by the Federal Government towards aiding the production segment of enterprise is in the field of economic statistics. For years the bench-mark for American manufacturers has been the Biennial Census of Manufacturers. Because of the war, the 1939 Census is the last available in its entirety. Beginning in April of this year, the Government Printing Office started to turn out the results of the 1947 Business Census. In pamphlet form, this census is available by states and by twenty-one classes of industries. The entire census will be published in three bound volumes. It would not be easy to over-emphasize the vital importance of this basic report on American industry. For each of the some 460 industries covered, data are given on employment, payrolls, value added by manufacture, value of shipments, cost of materials, expenditures for plant and equipment, etc.,—an up-to-date body of detailed information on which to base intelligent business planning.

Modern marketing has become a highly technical activity, yet the bulk of the data that it must consider comes directly or indirectly from Government sources. The factors which guide the geographic concentration of sales effort are essentially those of population density and characteristics available only from the Bureau of the Census. The Bureau issues special census data for specific geographical areas at the county level. Such reports are available on request without charge and contain information of vital importance to business concerns planning to extend their establishments in those areas. In addition to population figures, these reports include information as to labor conditions, weather, school enrollment, labor migration and influx, dwellings owned and rented, and similar detailed information that gives an intimate picture of local conditions. And it is available in no other authoritative way.

### *Marketing Information*

The Department of Commerce's personal income studies and the Treasury Department's tax return data are fundamental indexes of community wealth and income. The various housing census are revealing sources of information on home ownership, the quality of housing, the need for improvements, etc. The Department of Labor's statistics of employment, and wages and hours, and on occupational outlook should be grist for the mill of anyone concerned with planned selling effort.

As the search for markets becomes more extensive, more businessmen will wish to consider the export potentialities of their products. The Bureau of Foreign and Domestic Commerce of the Department of Commerce, in addition to maintaining lists of possible imports, issues general studies such as "Export and Import Practice" (306 pages for $1.06) and more or less intensive economic studies of foreign countries oriented towards an evaluation of their potential market for American products. The latter are issued as part of the "International Reference Service" for $5.00 per year.

Cognizant of its statutory functions, the Department of Commerce issues many publications that are in the most explicit fashions intended to "promote domestic Commerce." "The American Business Directory", "Check List to Help You Introduce Your New Industrial Products", "Metropolitan District, Basic Data Sheets" are representative samples of the variety of titles available. Worthy of special mention is the paper bound book "How Manufacturers Reduce Their Distribution Costs" (Price $0.35).

### *How To Get Government Data*

There is no simple catalogue of Government documents. However, a current monthly catalogue is sold on a subscription basis for $2.25 per year. To most businessmen the weekly "Business Service Checklist" of the Department of Commerce is of greater value than the complete government publication catalogue, since the checklist includes press releases by the Department of Commerce. The subscription is $1.00 per year. All Federal Government publications may be purchased from the Superintendent of Documents, Washington, D. C.

If the name of a particular document is unknown, or if there is some uncertainty as to whether the desired information is available, the most likely Department should be consulted. Should the information requested not be available and require considerable research most of the Government Agencies will do the necessary work at cost. The more common publications of the Department of Commerce, as well as general advice on the facilities of the Department are available at its 48 field offices located in principal cities throughout the country.

Last, but certainly not least effective, the inquirer may consult his member of Congress. Congressmen are anxious to help their constituents, and their secretarial staffs are generally well informed on where and how information may be obtained.

Periodically attacks are made on waste in Government. Recently this type of attack was centered on the volume and variety of Government publications. Yet this activity is carried out upon the direct instructions of Congress and in answer to some clearly expressed need, and at the insistence of the people. Attempts to seriously curtail some functions of Government are certain to bring forth cries of hardship from groups which have found profit in the use of the data. One obvious way towards greater economy is for the more widespread and intelligent use of the existing services offered by the Government.

# The Purchase of Transportation

● By E. L. Cady



The "Trainstacker" is typical of specialized modern loading equipment. It is 17% lighter than comparable standard models, and over-all height of 79 inches permits passage through freight car doors.

**Rate classifications are flexible for the man who knows traffic rules.**

**Speed in transit may be offset by delays in loading and unloading.**

**Batch loads and modern materials handling equipment cut transportation costs.**

SOME purchasing departments buy all the transportation or specify all the carriers their companies use. Others specify only the carriers for incoming goods. Still others have highly trained transportation men as members of their company management staffs. But even in these last cases there is no purchasing man who does not have to deal with the problems of the selecting of carriers. Transportation affects nearly everything the purchasing agent does.

Reducing the costs of outgoing shipments is far from being the only problem. Very often opportunities exist to cooperate with vendors for the reduction of costs all along the line. Several elements can enter the picture.

### *Product Design Factors*

In one extreme example, electric fans which were to be shipped to Asiatic countries had to undergo a costly redesign to solve a transportation problem. As shipped to a domestic market these fans had their blades wired in place so that there would be no rotor damage from transportation shocks. The Asiatics plugged in the fans and turned on the current without first removing the binding wires, resulting in serious damage before the equipment ever got into use. Both product and packaging were redesigned so that the wires would not be needed.

Machine tools, some types of fluorescent lamps, electronic tubes and electrical instruments are a few of the thousands of products whose designs have been increased in cost by the need to resist hazards of so as to comply with the space limi- transportation and handling. And in the case of some of the larger machines, the need to be demountable tations of freight cars or of motor trucks is a factor.

The building of adequate freight handling platforms or motor truck docks at both shipping and receiving points can eliminate much of this trouble and thus reduce costs. An investment of less than $1000 in a motor truck dock saved its cost in less than six months for a manufacturer who ships fragile glass items to his branch plants and direct to industrial customers. The saving was in the elimination of shock resistant factors from the design of the product and from its packaging.

Railroads are adding mechanical handling facilities to many of their transfer terminals, the purpose being to reduce loss and damage claims as well as to speed up shipments. Many of the new freight car devices, such as superior braking mechanisms, truck springs, and anti-shock draw bars, are aimed at protecting the shipments.

The point has been reached in some of the truck shipping methods, and must be reached by some of the railroads, at which some of the design features which increase costs but resist transportation hardships can be eliminated from products. The purchase engineer can watch for this, take opportunity to remove costs from the products of his own company, and also take the matter up with vendors who are shipping to him.

### *Savings by Reclassification*

Twenty-four cents per cwt. was taken from the transportation costs of hinges by shipping them disassembled instead of assembled. Assembled, the three pieces (two straps and a pin) were classed as

finished products. Disassembled, they were classed as common iron.

The saving was not an entire one. Assembly is part of manufacture, part of production cost. Some one at the receiving end had to perform this operation, and pay for it. There are quite a few hinges in 100 pounds. Nevertheless there was a worth while saving.

Not all types of hinges are fitted for assembling at a receiving point. Study of the designs of items is necessary to purchase engineering if advantages of these kinds are to be cashed.

Gray iron pulleys had their hubs faced-off and bored at the foundry and hence were classed as finished castings. The company which received them had to perform further machining operations upon the rims. Therefore the purchase engineer of that company put in a claim and had them reclassified to a lower rate. Since he had bought f.o.b. his plant, he returned the saving to the supplier. This won him good will and got him price concessions and quicker services from that foundry at times when he needed them.

Transportation rates can be complex structures, but are built generally on the factors of cost and risk to handle. The value of the product affects the risk since a high value item means a high claim if damaged. The need of the transportation company to protect the item while in transit affects the cost to handle and also the risk. Finished castings have higher values and also need more protection than unfinished ones. Hence there is more than one rate on castings, and the sharing of the production operations between the foundry and the user can hinge upon the added transportation costs if the foundry does any of the finishing.

### *Specialized Knowledge of Rates*

Rate classifications may be subject to change if either the transportation carrier or the payer of the freight puts in a claim within two years after the shipment is made. This "two year sword of Damocles" prevents many a purchase engineer from trying as hard as he might to get classifications reduced.

Added to this; the book which gives all the ratings, for rail freight, the "Consolidated Freight Classification" is as thick as a Manhattan telephone directory and is supplemented at frequent intervals. The Railway Express Agency Official Express Classification is not quite so imposing but, with its supplements, is no mean pamphlet in itself. Trained transportation men will wangle their way about the pages of these tomes in much the same spirit that others play bridge, and are highly skilled in getting the most favorable rating.

Transportation is a service, and can be an intricate one. The purchasing of transportation is subject to the same strategems that apply to the buying of any service. There are many opportunities to reduce classifications by changing the sharing of production operations between shipper and receiver. But many a purchase engineer will be best off if he obtains the help of a professional transportation consultant before attempting to cash them.

The interstate trucking companies have agreed among themselves, with tariffs and with packaging requirements which they believe to be generally comparable to those of the railroads. The air freight companies are not so thoroughly in agreement, especially as to packaging requirements.

### *The Cost To Load*

The carrier loading operation is a materials handling problem; it consists of picking up the goods to be shipped and placing them within or upon the carrier.

For railway freight, an important part of this may be the preparing of the car interior, the removing of nails and other damaging items left by previous users of the car, and the preparing of bracings or other protection of the load.

These preparations are a penalty for the superior volume and weight which a freight car can carry in comparison to a truck or to an airplane, and for the superior versatility of the freight car. More shippers use freight cars for bigger shipments of wider varieties of items than is the case with other carriers. The shippers leave their debris behind.



**Railroad modernization includes built-in facilities for fastening and bracing cargo loads.**

Trucks and aircraft have more built-in facilities for fastening and bracing loads, but the railroads differ widely in the degree of modernization of their cars. Selection of a carrier sometimes depends directly upon the loadability of the cars or vehicles it offers.

### *Mechanical Materials Handling*

Most shippers use the same general type or types of materials handling equipment for carrier loading as for their other plant uses. A plant equipped with overhead conveyors will run a line to, and perhaps along, the loading platform, but will expect to drop the goods there and have them handled into the cars

or the truck trailers by hand trucks or other manual methods. A plant equipped with industrial trucks prefers the palletized load, or some other method by which entire batch loads may be placed aboard the carrier as units.

The batch loading method is increasing, and with it a trouble. A fairly high percentage of all loss and damage claims are occasioned by the wheels of industrial trucks breaking through the floors of freight cars. The damage is for loss of time of the truck, of the men who run the truck, of the extra men and equipment needed for extricating the truck, but not for the fact that the further loading of that car must proceed by more costly hand methods.

### *Loading Methods*

Industrial truck designers have, either on the market or else in process of development and design, special light weight trucks to solve this problem. But until the use of these models becomes more general, proposals have been made that certain freight cars be classified as "not suitable for loading by industrial truck methods".

Many of the over-the-road truck trailers also are not suitable to be entered by ordinary or heavy weight industrial trucks. The new, lightweight industrial trucks will solve problems here also.

Palletized loads are advancing rapidly in applications. An executive of a company which trucks between New York and Pittsburgh said that he never yet has been able to pack a load of loose packages so tightly that they would not wedge themselves together so as to provide space for another thousand pounds by the time they reached their destination. Palletizing can stop this trouble. Palletizing also reduces costs to package, to unpackage, and to protect. But the loaded pallet is useless if it cannot be loaded aboard the carrier without undue cost for handling. This loadability is directly related to the physical conditions of freight cars and of motor trucks, and therefore is a direct factor in the selection of a carrier.

### *Packaging Problems*

A package can have functions, such as its merchandising values, other than the protection of goods. But the requirements for protection of goods, and for ease of handling, are important to the selection of a carrier.

Interstate trucking companies are in close agreement with the railroads in the effects of packaging upon rate classifications and upon the handling of loss and damage claims.

There are important differences between C.L. and L.C.L. packaging requirements, parallel ones between T.L. (truck load) and L.T.L. Tin cans, for example, can be packed loose or in bulk in car load lots, but it is obviously necessary to package them for L.C.L. shipment. A truck holds materially less of weight or volume than does a freight car, therefore advantage sometimes can be taken to use trucking for the reduction of packaging cost for smaller quantities.

Palletizing materially reduces the damage hazards of many kinds of L.C.L. and L.T.L. freight. Carton and other packaging materials makers are watching this situation closely and are attempting to force a recognition and a changing of the classification rules. Although admitting that palletization is one of the best things that shippers ever did for them the carriers do not as yet feel that they have had sufficient experience records to warrant making the desired changes. But the changes are almost certain to come, and when they do they will remove some of the cost disadvantages of L.C.L. and L.T.L. freight and will cause changes in the selections of carriers accordingly.

The application of rust preventives to metal surfaces often is required, to a degree directly dependent upon the chances of the goods being exposed to wet or to dampness while in transit. Some kinds of glass products must be packed in straw; the straw chemically discolors the glass if the package becomes wet, and hence the ability to assure weather protection while in transit is an important factor in the selection of a carrier.

As with other damage hazards, some railroads and some trucking companies use better equipment and more careful methods than do others. For goods which are likely to travel on almost any carrier, the protective packaging must be adequate for the worst of carriers. But when

**Conveyor systems connected with shipping platforms cut down the cost of loading and unloading.**



**Shipper and carrier alike profit by the convenience and safety of palletized loads.**



shipments are made to, or received from, only a limited number of points, then purchase engineering often can reduce the costs of protection by careful selection of carriers.

### *Receiving and Unpackaging*

A product which is to be used at the production line is not fully transported until it reaches the production line. Enroute to that point it must be removed from the carrier, perhaps stored in the receiver's warehouse, unpackaged, inspected, and gotten to the point of use. All of these factors affect the costs to package, and hence the costs to transport and the desirabilities of various carriers.



**Bulk shipment by rail is the only practicable transportation method for many heavy products.**

### *Savings in Unpackaging*

In on plant, anti-friction bearings carried by ordinary means and stored in the ordinary way were required to be in individual packages for protection. But carried by a single direct door-to-door carrier, and delivered directly to a conveyor which took them to the production line without intermediate storage, they could be packaged in bulk, a large number being placed within a single protective box. The saving in packaging costs was considerable, but there was an even greater saving in unpackaging costs at the production line.

In a similar instance, air filters which had been packed four to a box were packed three hundred to the palletized carton, so that the opening of just one carton would keep the production line going for some time. The practicability of this depended upon the loading and unloading facilities at the shipping and receiving plants, and these factors in turn dictated the selection of a carrier whose equipment was suitable for the use of industrial trucks.

The unloading facilities of many receivers are grossly inadequate. At least one of the largest of factories is shunned by the better and more reliable truckers because a loaded truck which reaches that plant may be tied up there for an entire day. Poor facilities often dictate the use of carriers to which the existing facilities can most readily be applied.

### *The Matter of Speed*

Over-the-road or over-the-rails speed is the most dramatic factor in transportation but is not always the most important. Steadiness, dependability of delivery dates and delivery hours, can outweigh speed of transit.

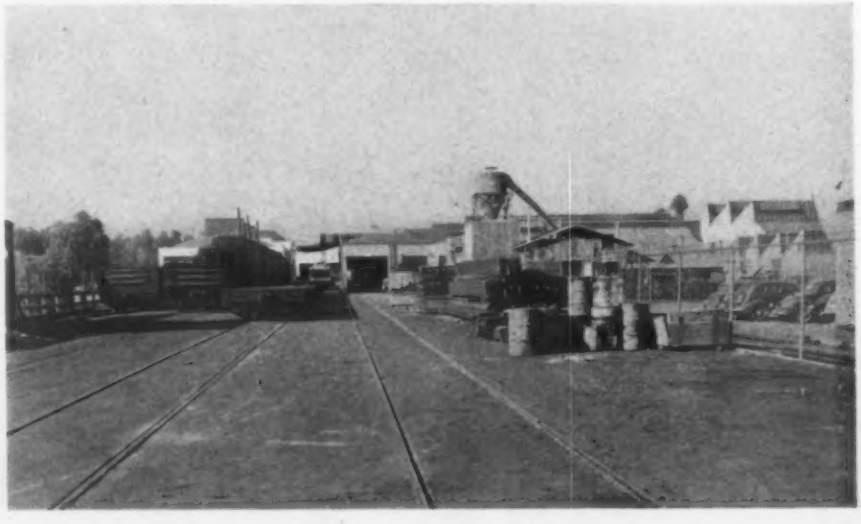
Most shippers want to ship in the evening, and most receivers want to receive in the morning. This especially applies to L.C.L. and L.T.L. deliveries. But a steady rate of delivery and of receipt all day treating the interplant transportation system on the same steady flow basis that is applied to intraplant movements, can solve many of the problems of door-to-door deliveries and may lead to the selection of carriers which give more efficient service.

As a rough rule of thumb, a freight car minimum capacity weight is about twice that of a truck, and the over-the-road speed of a truck is about twice that of a freight car. For some goods and some companies it is easier to maintain steady loading or unloading operations when the larger capacity of the freight car is waiting at the siding, and for others a steady succession of trucks reaching and leaving the platforms is more efficient. The railroads now have some 110 "token" or "red ball" freight trains which make specified over-night runs of 300 miles or more. While these bridge the gap between truck speed and freight car over-the-road speeds somewhat, they do not take care of the fact that the railroad token speed is city-to-city and not door-to-door.

The superiority of aircraft speeds is obvious. Here again the deciding factor may be that of getting the goods to and from airports. Slow handling can overbalance speed gains.

Purchase engineering of the selection of carriers needs the balanced consideration of many factors. Rates, classifications and over-the-road speeds are not enough. And as palletizing, mechanized transfer stations, token trains, and other comparatively new facilities find their true places, the balance of advantages between carriers will change rapidly.

**Yard and platform facilities are an important factor in efficient transportation service.**



# Improper Installation Can Ruin the Value of a Purchase

● By W. F. Schaphorst

MOST manufacturers today are very careful about sending complete instructions with their products in order that there will be no failure in operation and that the product itself will not be ruined because of unintelligent application.

The writer knows of one instance where the manufacturer always writes a personal letter to the executive in charge of installation, in addition to the standard printed instructions that accompany the product. Yet in spite of this extra precaution he finds his product installed the wrong way, time and time again.

One buyer actually felt insulted by this manufacturer because of the sending of detailed instructions. He was very cold to the salesman when the latter appeared on the premises again. Said the buyer, rather loftily: "Don't you suppose I know how the simple little jobs around the plant ought to be done, after twenty years' experience, without being told in schoolboy fashion?" The salesman apologized, of course, explaining that the same thing is done in every case and for reasons that he made clear. So the buyer warmed up again and didn't feel so badly about it. In fact, he invited the salesman out into the plant to view the installation. Then it became his turn to apologize when the salesman discovered that the product had actually been installed "backwards" in error. It so happened this this product would operate either way, much like an ordinary globe valve, but there was a right way and a wrong way, and the results were much more satisfactory when the right way was used.

It is a bad habit in some companies to unpack a thing hurriedly and throw the instructions away with the packing. The snap judgment is: "That's just advertising matter, and we know all about it already." Thus in one instance some years ago, before lacquers were as well known as they are today, a friend received a machine that arrived knocked down. The machines and finished parts were covered by a blue lacquer. He couldn't put the parts together because of the thickness of the lacquer coating, and he couldn't get the lacquer off. He tried scraping, washing with hot water and soap, gasoline, kerosene, and about everything else he had on hand, but the lacquer still remained. Finally he telegraphed the manufacturer and received a short and snappy reply which said: "The instruction book tells you to use alcohol." He had thrown the instruction book away. Alcohol removed the lacquer with ease.

### *Methods Improve Constantly*

Experience is not always the answer. Things are done differently right along. They are done better this year than last. Next year they will be done differently and better than this year. And so on, without end. It therefore behooves us to be careful about throwing away printed matter of this kind. Always scan it with care, at least even though you don't read every word. Be sure that you are acquainted with the "latest and best" method of applying the part or product, no matter how simple it may seem.

Thousands of dollars worth of equipment is ruined every day, or falls short of giving maximum service and satisfaction, because it is misapplied. The reason for the misapplication is usually the know-it-all spirit in which too many buyers receive shipments and install them. Tomorrow, very likely, some of us will carelessly throw away directions in the same old way, without thinking. It is done mechanically. It is a habit—a bad habit.

This though can be carried a step farther. Suppose the installation directions are carefully followed when $1,000 or more is spent for electric motors, engines, compressors, or other important mechanical equipment. But when an equal amount of money is spent for the more commonplace devices such as pulleys, sheaves, shafting, belting, and the like, it is not an uncommon practice to allow almost any mechanic to do the installing. It is true that a college education is not necessary to install a belt drive, but there is more to it than merely cutting the belt, punching holes, and then lacing. $1,000 worth of belting can be ruined in a surprisingly short time if the shafts are not parallel, if pulleys are not correctly aligned, if the belt is not cut to the right length, and if the joint is not properly. made.

Novices should not be permitted to install expensive belts for the same reason that they are not allowed to install important machinery. After a belt is once cut too short, it cannot be easily lengthened. There should be no guesswork about how long any belt should be cut. It is better to start by cutting a belt too long, yes; but why not cut it just right?

Cemented belts must be cut longer than laced belts. Many thousands of dollars worth of belting have been cut up and destroyed by thoughtless installers who cut the belt too short and then "stretched it to make the ends meet. If a belt is too tight when first placed on the pulleys, it will be ruined prematurely due to overstressing. Bearings sometimes get hot owing to tight belts. Much power may be lost because of excessive tightness and the resulting sprung shafts. Novices are not aware of most of these facts.

Knowledge of belting is easily acquired. Before allowing your belt operator to cut up good belting, be sure that he knows the rudiments of proper installation.

Take a thing as "trivial" as cutting the belt. Unless it is cut "square across", using a carpenter's or other square, the belt will not run true, and there will be greater stress on the short side than on the long side. The short side is therefore weakened first. Uneven running is a common cause of running off, and belts that run off are notoriously short-lived.

These are simple principles, but very important. They often make the difference between getting full value from a purchase and running up excessive "hidden" costs.

# Stores and Inventory Control

**Complete materials control includes inventory policies, procurement, and stores operation.**

**Modern trend combines these responsibilities under purchasing department jurisdiction.**

**Survey cites current practice in cross-section of representative manufacturing companies.**

ONE of the questions most frequently asked in connection with industrial organization is whether the stores department should come under purchasing jurisdiction.

There are of course two alternatives to such an arrangement—stores can be set up as a separate and independent department, or they can be placed under the jurisdiction of some other department, usually the one which is to use the purchased goods and for which they have been procured. The question can also be answered in two stages, covering (1) the policies of material and inventory control, determining quantities to be purchased and stocked, and (2) the physical administration of stores and issue, including the accountability for materials.

Advocates of purchasing control over stores point out that the two functions are logically related, representing successive steps in purchasing decision, procurement, and handling of the selfsame material items. They are so closely related, in fact, that stores records must be constantly available to buyers as a guide to purchasing policies and action. Inventory and purchasing policies must be flexible, and they must be coordinated that the flow of materials may be adequate to meet the need and, equally important, to avoid losses and expense through obsolescence and excessively slow moving stocks. The exercise of purchasing judgment as to timing and forward coverage, in relation to lead times, market conditions, and the like, also indicates the advisability of a single responsibility for supply.

As a matter of management control, accountability for expenditures can be far more effective when coupled with accountability for materials up to the time of issue and use, including the responsibility for current investments in purchased goods and their application to the intended purpose.

The argument for independent administration of stores is most persuasive in operations where service and maintenance are the dominant factors, rather than production, as in the case of railroad or public utility operations, and when many scattered stores locations are involved, raising a more complicated administrative problem. There is no question but that the storekeeper's function and responsibility are of major importance under such circumstances; even so, close coordination with purchasing is essential. The argument for separate jurisdiction as constituting a "check and balance" against purchasing is pretty well outmoded in modern management philosophy.

Stores control by using departments implies the concept of purchasing as strictly a service function, subordinate to production. While it does make for a more comprehensive cost responsibility within the production departments, it tends to negate the responsibility and opportunity for savings through proficient purchasing and to obscure the materials cost factor.

### *Materials Management*

With cost of materials constituting 50% or more of total manufactured product cost, on the average, there is valid reason to segregate this responsibility at the policy level so that any conflict in relative advantages in purchasing and production economies can be evaluated and resolved from an over-all, objective viewpoint of company advantage rather than permitting either departmental view to prevail, and to retain this separate accountability up to the point where purchased materials actually become materials in process. Again, thorough coordination is essential to good performance.

The most recent development in management thinking on this subject is to consider materials control as an inclusive function, giving it the full importance that it merits, with both the purchasing and stores activities included as operating details of the broader policy and plan. While this is nominally a new idea, and introduces a new terminology in the management vocabulary, it is really nothing more nor less than the broadening executive concept of the purchasing responsibility. In a considerable number of progressive companies the chief purchasing executive is known by the title of Director or Manager of Materials, rather than by the traditional titles which emphasize the actual purchasing or procurement responsibilities of his office and thereby tend to limit the scope of his full potential contribution to management.

The arguments on this question, pro and con, have been detailed at length many times and could be prolonged indefinitely, to no good purpose. The most conclusive answer, and most reliable index to current thought on the subject, are to be found in actual practice, representing management's conviction and decision on how the stores responsibility should be handled.

### *Stores Control*

A survey recently completed by PURCHASING Magazine, covering 484 representative manufacturing companies, shows that the predominant opinion is in favor of having the administration of stores within the jurisdiction of the purchasing department. Specifically, the question asked: Is the stores department in your company a separate department, or under the purchasing de-

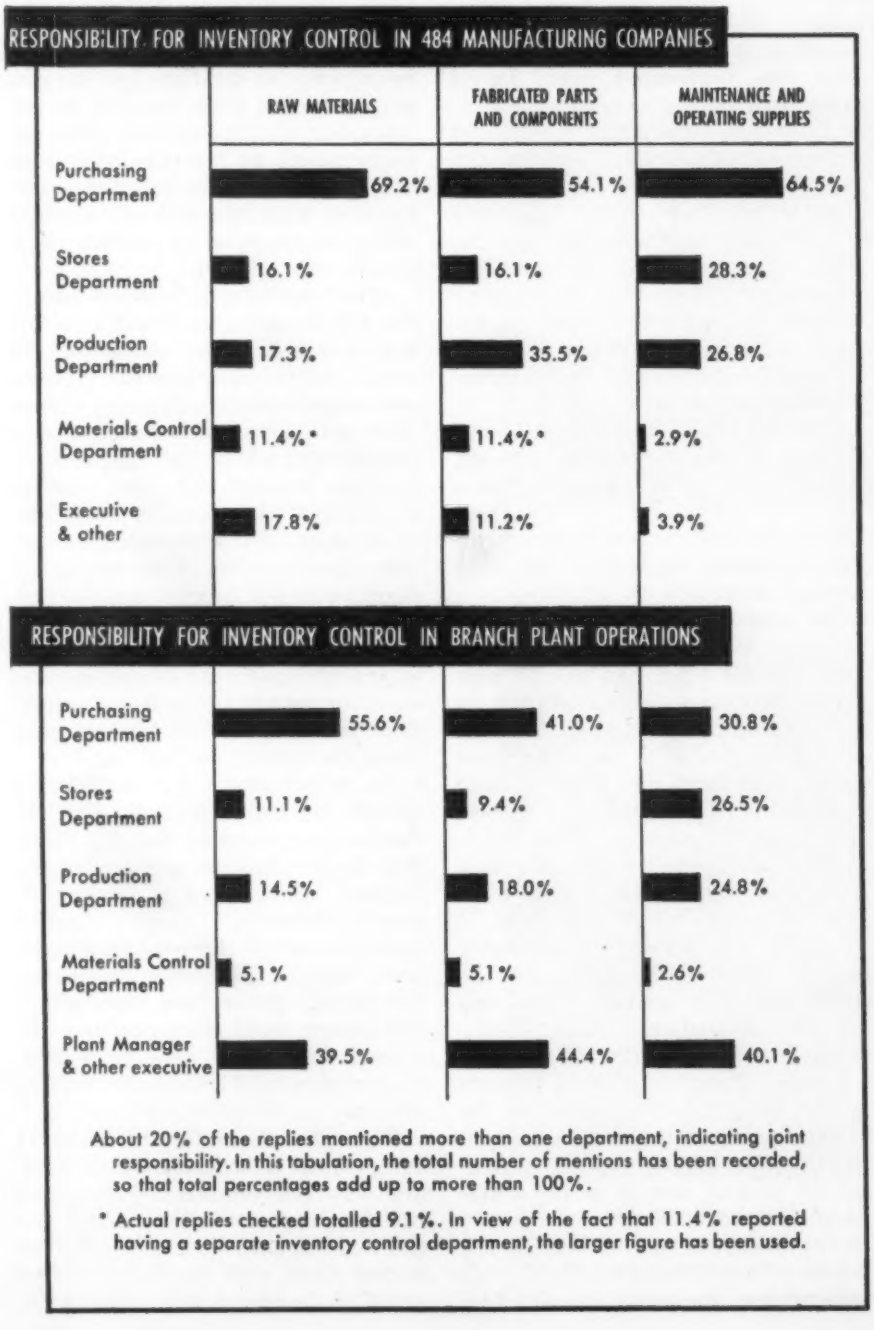
partment jurisdiction, or under some other department? The replies indicate the following:

| | |
|---|---|
| Separate Dept. | 18.2% |
| Under Purchasing Dept. | 61.2% |
| Under Other Dept. | 20.6% |

That the trend is distinctively toward stores control and operation as a part of the purchasing responsibility is indicated by comparing these findings with a survey made some ten years ago by the National Association of Purchasing Agents and cited in the Association's "Handbook of Purchasing Policies and Procedures" (1939). In that study, purchasing departments were reported as controlling stores as follows:

| | |
|---|---|
| Raw Material Stores | 40% |
| Maintenance Stores | 37% |
| Production Stores | 34% |

In each case, the percentage was somewhat higher in the case of the smaller companies reporting, and lower in the larger companies where a more finely divided and specialized delegation of authority typically exists, but in no case was the figure greater than 45%. No breakdown as to the size of organization has been made in the current study, but the over-all figures show a substantial trend toward placing the control of stores operations under purchasing department supervision and responsibility.




About 20% of the replies mentioned more than one department, indicating joint responsibility. In this tabulation, the total number of mentions has been recorded, so that total percentages add up to more than 100%.

* Actual replies checked totalled 9.1%. In view of the fact that 11.4% reported having a separate inventory control department, the larger figure has been used.

A great deal of emphasis has been placed during the past ten years on the subject of inventory control—quantities and scheduling—as differentiated from the physical operation and administration of stores departments. The N.A.P.A. survey of 1939 reported that inventory control was the exclusive responsibility of purchasing in 41% of the companies, and was shared by purchasing and some other department in 39%. The current survey reveals that 11.4% of the companies reporting have established separate departments specifically charged with this responsibility.

Complete analysis of the replies on inventory control responsibility is shown in the accompanying charts. In normal plant operation, the purchasing department is the dominant factor, but in a considerable number of cases—20.9%—the responsibility is shared with other departments. This is particularly true of raw material inventories, where forward buying and stocking is frequently a major policy matter. Greater leeway is given to production departments in regard to inventories of fabricated parts and components, and to both stores and production departments in respect to maintenance and operating supplies.

### *Branch Plant Stores*

Special inquiry was made about purchased stores in branch plant operations, and these replies have been segregated. The pattern in this chart differs in one important particular, in that the plant manager has greater responsibility for inventory control, whereas in the general picture management executives play a relatively minor part. This is readily understandable in view of the fact that the actual purchasing in many of these cases is done by the central purchasing office at the main plant, while inventory is an on-the-spot problem. It should be noted, however, that while this situation is generally true, the classification of raw material stores—which, as previously noted, involves considerations of policy as well as of immediate production needs—the purchasing department has the dominant role.

The survey tabulation covers three inventory classifications—raw materials, purchased fabricated parts and components, and maintenance and operating supplies. Inquiry was also made regarding control of fin-

(*Please turn to page* 315)

# Saving with Modern Space Heaters

**Cost analysis explodes general belief that old-style open heaters are inexpensive.**

**Foundry saves $4,372 per year with modern equipment after full amortization.**

**Greater working space, efficiency, safety, and comfort are also achieved.**

**By John S. Wendt**
Heating Engineer
Dravo Corporation
Pittsburgh, Pa.

ARE coke-burning salamanders more economical for heating in a large industrial building than modern large capacity, gas-fired space heaters?

To find the answer to this question, a common one in foundries, steel mills and other sprawling high-roofed structures, officials of the Rosedale Foundry & Machine Company, Pittsburgh, Pennsylvania recently made a detailed analysis in its plant which specializes in the production of Meehanite Metal castings.

Despite the generally accepted belief that it cost less to use salamanders than to install and operate modern heaters, the analysis showed differently. Conclusive proof now has been provided of many advantages in addition to reduced operating costs, since the company switched from salamanders to a modern heating system.

Taking into consideration the initial cost of purchasing and installing the new gas-fired heating equipment, the net annual savings, compared with use of salamanders, amounts to $402. In four years, after the new equipment has been amortized, the savings will total $4,372 per year.

Financial benefit is not the only advantage of the new heating system—there are a number of others that officials of Rosedale consider of equal importance. High on this list is employee health and comfort.

When salamanders were used, the foundry area was not heated uniformly, and employees had to gather around the open-flame fires to keep warm on cold days. Those working close to the salamanders frequently had to put up shields because too much heat radiated from the cast iron and perforated metal barrel coke burners.

Excessive amounts of smoke and sulfurous fumes given off by the coke fires also caused employee discomfort. They were especially troublesome for the foundry's three crane operators, and windows had to be opened to relieve the concentration of smoke and fumes in the roof. When this was done, of course, the operating area was chilled by infiltration at the working level.

Another trouble with salamanders, Rosedale officials pointed out, was the hazard of upsetting them and spilling live coals over the floor. There also was the possibility of employees being burned by brushing against them.

Rosedale's 47-year-old foundry building, like other industrial structures of its type, had in the past been considered difficult to heat by any method other than salamanders. It was felt that with the uninsulated metal walls and the 48½-ft. high roof in the main bay, fuel consumption would be excessive. The building is 452 ft. long. The area used for foundry and machine shop work is 60 ft. wide and an additional 28 ft. width is occupied by a two-story section which is integral with the main plant. The second floor of this section is heated separately.

Dissatisfaction with salamanders prompted Rosedale officials to start an investigation to determine the feasibility of changing to a modern heating system. Based on a five-month heating season in the Pittsburgh district, it was found that the total measurable cost of heating the foundry and machine shop with salamanders amounted to $11,134. This figure does not include such intangibles as the time lost by employees when they stopped to get warm or the production interruptions caused by frequent movement of wheelbarrows through the working area with coke and ashes—costs which might equal or exceed measurable expenditures.

Coke used during one season in the salamanders cost $8,400. To this was added $311 for unloading the coke used only for heating. Labor needed to keep the salamanders supplied with coke and to remove ashes added up to $2,423 annually.

There were 39 salamanders throughout the foundry and machine shop. These provided no heat for a small portion of the mezzanine floor where the cupolas are charged. Employees in that area had to wear heavy clothing to keep reasonably warm. Another type of heating was used for the core shop on the second floor which is cut off by partitions from the rest of the building.

In contrast with the annual cost of $11,134 for salamander heating, the analysis showed that by using four large capacity, gas-fired space heaters, the cost would be $10,732 yearly—including 25% annual amortization of the new equipment and initial installation expenses ($13,862). After four years, when the heaters would be amortized, the annual cost would drop to $6,762, or a saving of $4,372 each heating season.

The calculations for the gas-fired equipment, Rosedale officials said, are very conservative. They are based on maximum heat losses for the building, maximum number of degree days, and keeping the plant at 60° F. 24 hours daily with a 0° F.

outdoor temperature. Results experienced so far with the new heating system have exceeded expectations, both from the standpoints of fuel economy and providing comfortable working conditions.

Four heaters were installed about 80 ft. apart along the north wall of the foundry and machine shop. They occupy a total area of only 150 sq. ft., in contrast with about 975 sq. ft. of space consumed by salamanders. (The salamanders themselves took up a total area of 351 sq. ft. and the additional area represents the approximate space lost for production because of high heat radiation from the coke-burning units.) Moreover, management pointed out that some 600 sq. ft. of space had been required for salamander coke storage. This has now been freed for other use.

The modern heaters operate on the principle of recirculating warm air in the working zone—between the floor and about 12 ft. above the floor. This method tends to reduce heat losses through the roof, but does not interfere with natural draft that carries away process smoke and fumes. The smoke and odorous fume problem created by salamanders has been completely eliminated. Crane operators no longer are bothered by the fumes.

Air from floor level is pulled into the base of each heater, warmed as it sweeps the corrosion-resistant stainless steel combustion chamber and then is discharged above head height through directional nozzles. This holds heat in the working zone and makes it possible to establish comfortable, uniform temperatures in the large building with a minimum number of heaters.

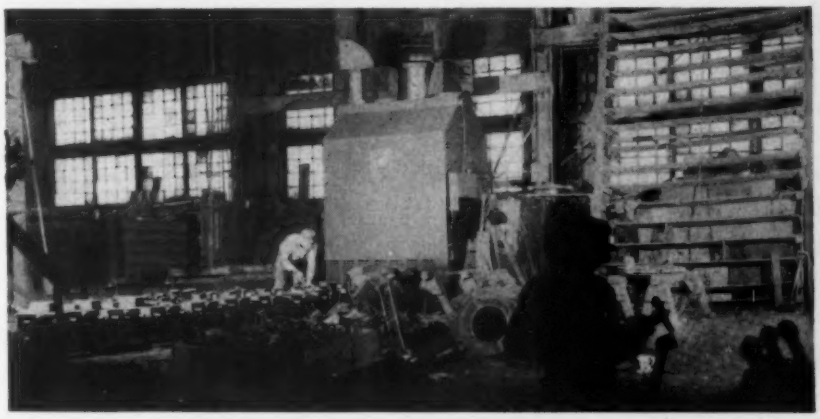
Two of the heaters have an output capacity of 1,750,000 Btu per hour each, and the other two are 1,500,000 Btu per hour models. The larger heaters can handle 19,000 cu. ft. of air per minute each, and the smaller ones, 17,000 cu. ft. per minute.

Installation of the four gas-fired heaters was a simple matter. Mounted directly on the floor, they were ready for immediate operation when fuel piping, power lines and vent stacks had been connected.

Use of these modern heaters, Rosedale officials pointed out, has proved not only that salamanders are more expensive to operate and maintain but that it is possible to establish comfortable temperatures economically in a foundry building without producing noxious fumes in the heating system.



**With salamander heating, smoke and fumes "hung" in the foundry room because air temperature was low. Note hazy atmosphere.**



**This is one of the four gas-fired heaters that supplanted 39 salamanders at the Rosedale plant. In addition to the cost savings, working conditions are greatly improved. Smoke and fumes are quickly dispersed, and warmth is held in the working zone.**



**Three salamanders had to be used in this small area. Modern heaters take up less than one-sixth of the floor space formerly required by the old method, making 825 additional square feet available for production purposes.**

# Experience Wins Law Suits

**The time to avoid legal liability is before a transaction is consummated.**

**Recent court decisions call attention to a variety of common pitfalls.**

**Large sums of damages may be lost through lack of knowledge and foresight.**

● ***By Leo T. Parker***

PURCHASERS who have experience defending expensive law suits gain knowledge and save dollars and time entailed by future litigation. Knowledge thus gained will enable them to avoid similar legal pitfalls. If a similar suit is thrust on them they will be naturally prepared to win a favorable verdict.

Purchasers need not be alarmed by the contents of this article. Its purpose merely is to impress the logical necessity of being informed on up-to-date decisions rendered by the higher court which seriously affect the profit or loss derived from conduction of business, or departments thereof.

During the past few weeks the higher courts rendered several outstanding decisions involving purchasers' pitfalls in sale contracts, warehousing, infringement of trademarks, fair trade, unfair competition, price cutting, anti-trust laws, etc. We shall briefly review these important new cases and point out how readers may avoid becoming involved in similar legal entanglements.

### *Owner's Liability*

First, it is well to explain the cause and outcome of a few new higher court decisions which illustrate how simple legal errors may result in heavy financial losses.

See the late and leading higher court case of Bonvill, 26 So. (2d) 25. Here a purchaser loaned a seller a mechanical hoist to accommodate the latter and assist him to economically load the merchandise for delivery. The seller did not clearly know how to operate the hoist and severely injured his back. The injured seller sued the accommodating purchaser and owner of the hoist for damages.



The higher court awarded $42,083 damages and said that one who accommodates another must exercise care to know that the act of accommodation will not result in injury to the person being accommodated. This purchaser could have avoided this damage allowance had the seller signed a written agreement to use the hoist *at his own risk*.

Also, see Humiston v. Hook, 194 Pac. (2d) 122. Here the testimony showed that a plant owner named Hook accommodated employees by permitting them to keep convenient to their work a vat of recently purchased highly inflammable petroleum liquids in close proximity to an emery wheel. One day the liquid was set fire by sparks from the emery wheel. The fire destroyed the plant, and an adjoining factory building owned by White Company. The latter sued and recovered $57,199 damages from Hook.

### *Dealings With Minors*

It is well known that ignorance is no valid excuse for violating a law.

For example, no person can make a valid sale contract with a minor. If he makes a contract, the minor may at any time cancel the contract and demand his money back.

For example, in Gage v. Moore, 198 Pac. (2d) 395, it was shown that a minor 14 years of age purchased a considerable quantity of merchandise and paid in cash at the time of the purchase. A few days later the boy demanded the seller to take back the merchandise and refund the purchase price. The seller refused to take it back or refund the money paid, and the minor filed suit.

The higher court held that the seller must take back the merchandise and refund the purchase price. This court said:

"If he was under age, he (minor) could rescind without offering to restore any part of the consideration."

For comparison, see Bombardier v. Goodrich, 110 A. 11, 9 A.L.R. 1028. This court said:

"The right of an infant to rescind his contract is unaffected by the fact that his father was present advising and approving the transaction. The assent of the father adds nothing to the binding force of an infant's promise."

Although a minor is *not* responsible on his contract, and he may rescind the terms of *any* contract,

nevertheless a minor *cannot* avoid responsibility for his tort or crime.

For example, in Smith v. Moschetti, 214 S. W. (2d) 73, the testimony showed facts, as follows: One Moschetti was engaged in the used car business in California. He made a "deal" with a sailor to use his "veteran's priority" and purchase a new Oldsmobile automobile from a dealer for Moschetti. The latter agreed to pay the sailor $300 "for his trouble" upon delivery of the car. Moschetti gave the sailor $2,100 with which to make the purchase. Instead of delivering the car to Moschetti, according to the arrangement, the sailor left California and drove the car to his home in Arkansas. Later he traded the automobile for a 1939 Ford truck. Moschetti sued to get possession of the Ford truck and $2,100. The sailor argued that he need not give up possession of the Ford nor pay $2,100 because he was a minor.

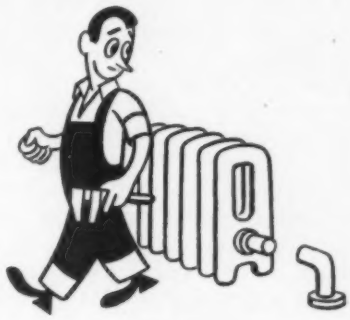


However, the higher court approved a judgment against the sailor and attachment of the truck saying:

"The mere fact that a cause of action is connected with a contract will not shield an infant from liability for a *tort* which is not a mere breach of the contract, but is a distinct willful and positive wrong in itself. . . The fact that appellee's (sailor's) cause of action grew out of his agreement with appellant (Moschetti) will not shield the latter from liability for his fraudulent conversion of the automobile, which is in itself an independent and willful wrong."

### *Knowledge Wins Suit*

An excellent illustration of how one with knowledge of law may prepare to win law suits is found in the late and leading case Dermer v. Faunce, 62 Atl. (2d) 304. The testimony showed that a contractor made a written contract with a property owner to furnish materials and labor and install a heating system for $1,500. Controversy arose and the property owner refused to complete the contract. The contractor brought suit and asked the court to allow him to remove from the building all radiators, heaters, and loose pipes and fittings.



The purchaser and property owner argued that the contractor could not remove any of these items because they had become a part of the real estate. The testimony introduced by the contractor showed that he had attached the radiators only temporarily by tightening the parts by hand and same were *not* tightened with a wrench.

The higher court permitted the contractor to remove the hand tightened items from the property. This court said:

". . . The radiators were not tightened with a wrench and were not connected to the boiler, and had not yet lost their character as personal property."

This contractor knew that if he did not permanently connect the various radiators and other items to the building the same remained personal property whereby he could remove them at any time the purchaser breached his contract. Apparently the purchaser had no knowledge of the established law or perhaps he may have permanently attached the items to his building.

### *Statute of Limitations*

Modern higher courts consistently uphold the validity of Statutes of Limitations which require a suit to be filed within a period stipulated by the law. Failure of a creditor to file a suit within this specified period "outlaws" the debt. The debt may be renewed by the debtor, or he may if he so desires pay the obligation.

According to a late higher court decision an "outlawed" debt may be renewed (1) if the debtor acknowledges the debt in writing; or (2) if the debtor makes *any* payment as low as 25 cents on the debt; or (3) if the debtor agrees to pay the debt in full.

In the late case of Slagle & Company v. Bushnell, 16 N. W. (2d) 914, a seller sued a purchaser to recover an "outlawed" debt and proved that the purchaser made payments to the seller *after* the debt was outlawed. Ordinarily proof that payments were made automatically renews the debt. However, the purchaser proved that when making the payments he had specified that he wanted the seller to credit the amounts on items *later* purchased and which were *not* outlawed. In view of this testimony the higher court held the outlawed debt *not* renewed, saying.

"A person owing money under distinct contracts, has undoubtedly a right to apply his payments to whichever debt he may choose. A direction may be evidenced by circumstances, as well as by words."

And so here again we find a purchaser who had knowledge of law, and prepared to win a law suit.

### *Seller Prepares To Win Suits*

Obviously a purchaser is at quite a disadvantage if he has not prepared to avoid or win a suit and finds that the seller has efficiently made such preparations.

According to a recent higher court a seller may avoid liability on a guarantee, in a suit filed by the purchaser, if the testimony shows that the contract contained a clause which the purchaser read or signed stating that the product is *not* guaranteed.

For illustration, in Gibson v. California Spray-Chemical Corporation, 188 Pac. (2d) 316, a purchaser alleged that the seller breached a warranty on the quality of merchandise and asked the court to award him $2,900 damages.

The seller proved that a clause on the invoice states that the merchandise was not guaranteed. Therefore, the higher court refused to hold the seller liable, saying:

"Where a purchaser accepts goods with notice of disclaimer or warranty, there can be no recovery against the vendor upon a claimed breach of warranty."

On the other hand, a purchaser cannot be held to warranties appearing on invoices, tags or containers if he convinces the jury that he had no knowledge of the warranty.

For illustration, in People v. Beggs, 160 Pac. (2d) 600, it was shown that a seller shipped onions in sacks bearing labels which read: "Texas Onions 50 lbs. net weight." Although most of the sacks con-

tained fewer than fifty pounds of onions, the court refused to convict the seller of "misrepresenting" his product. The court said:

"A statement made but not heard by the buyer, consequently, would not 'represent' a higher quantity than the true quantity, nor would a legend on a sack, never seen by the buyer, constitute a representation."

### *Acknowledgment Is Required*

The same law is effective with respect to contracts and other notifications, agreements and the like not directed to the attention of a purchaser. Furthermore neither a seller nor a purchaser may complete a valid contract by sending the other party a notification or confirmation containing a clause to the effect that "no response means approval and acceptance".




In Gilmore v. Transit, 213 S. W. (2d) 880, the testimony showed facts, as follows: A purchaser made an agreement over the telephone with a seller to purchase a quantity of seed. The purchaser told the seller that his written confirmation would follow. The purchaser promptly sent the written confirmation to the seller. The written confirmation contained a clause reading as follows: "It is agreed that this confirmation is a part of the contract, and its acceptance without notification is acknowledgment of contract as above." In other words, the confirmation sent to the seller simply meant that if no response was received from the seller, the purchaser considered the telephone contract valid and binding.

Here the seller did not sign or return a copy of the confirmation nor did he ship the seed to the purchaser. The latter sued the seller for breach of contract and damages, but the higher court refused to render a verdict in favor of the purchaser. The court said:

"It may be reasonably inferred from the telephone conversation had with one defendant (Gilmore) a few days after the sale had been made, that defendant received the confirmation and took no steps to notify plaintiff (purchaser) of any errors in it."

Of course, it is true that if *both* buyer and seller agree and testify that a valid contract was made over a telephone, *both* parties are bound and obligated exactly the same as where a contract is written and *signed* by both parties. On the other hand, as indicated by the above decision, if either a buyer or seller contends that no binding contract was made by telephone conversation, a binding contract is not made although one party mails a confirmation or letter, stating that *no* reply indicates a valid and binding contract.

### *Auction Sales*

Considerable discussion has arisen from time to time over the legal question: If merchandise or equipment purchased at an auction sale is found to be in *very poor* condition, can the purchaser rescind the sale? The answer is *no*, unless the auctioneer announced this privilege *before* he auctioned off the merchandise or equipment.

For instance, in Bedgood v. Jeffcoat, 50 S. E. (2d) 260, it was shown that one Bedgood purchased an automobile at an auction sale. The sale was without any warranty, and the agreed price was $900. Bedgood accepted delivery of the automobile and gave his check for $900. Later Bedgood stopped payment on the check and refused to pay for the automobile on the contention that it was in very poor mechanical condition; and that it was worth *much less* than the purchase price $900.



Notwithstanding these contentions, the higher court ordered Bedgood to pay for the automobile. This court explained that unless testimony proves that an auctioneer *guaranteed* the good condition of merchandise *before it was auctioned*, the purchaser takes the merchandise "as is".

This rule of law is *not* applicable to ordinary contracts between buyers and sellers. If neither a seller nor his agent expressly guaranteed the subject of the sale, the court may imply from circumstantial evidence a guarantee that the merchandise is worth the purchase price.

For example, in Patton vs. Ballam, 58 Atl. (2d) 817, the testimony showed that one Patton operates a mink ranch. A partnership manufactured a mink food and sold and distributed this food to a number of mink raisers. During 1946 Patton purchased this food from the partnership and suffered great losses. He convinced the court that the losses resulted from the food not having sufficient nutritious value to enable the mother mink to give birth to healthy kits, and to give the kits during the nursing period sufficient and proper sustenance in the way of milk to enable them to live and mature properly.

Patton sued the partnership for heavy damages.

The lower court held Patton entitled to recover heavy damages from the partnership. The higher court affirmed the verdict, saying:

"In the very nature of things no direct proof of the cause of the trouble can be given. Direct proof is not necessary. Circumstantial evidence may be resorted to, and such evidence will be sufficient to justify the verdict."

With respect to the amount of damages and method arriving at the amount of damages for which the partnership was held liable, the higher court said:

"The measure of damages was the loss directly and naturally resulting in the ordinary course of events from the breach of warranty, and the evidence as to what the mink would have been worth in the fall had they lived and matured as expected, to the cost of feeding to maturity and the cost of pelting, and to the evidence of the value of the kits at birth and at the separation period. The amount of the verdict was $2,714.40."

### *Impossible to Perform*

According to a recent higher court, neither a buyer or seller can avoid his contract obligations on an excuse that it was impossible to fulfill the terms of the contract.

In Cloar Company v. Giacone, 35 So. (2d) 245, it was shown that a company made a contract to deliver certain material at once. The higher court held that although there had




The weight's in the load and not in the truck when frames, body panels, fenders, wheels and other truck structural parts are made of N-A-X HIGH-TENSILE. And while affording weight savings of up to 25% in section, the high physical properties of N-A-X HIGH-TENSILE insure superior strength and increased resistance to fatigue, corrosion, abrasion and denting.

This decrease in deadweight decreases on-the-job expenses, too. Trucks built with N-A-X HIGH-TENSILE consume less gasoline . . . require less maintenance . . . give longer service. And the excellent formability, weldability, and fine surface texture of N-A-X HIGH-TENSILE mean that you build them better, with no added fabricating problems.

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N·A·X
HIGH-TENSILE STEEL

**GREAT LAKES STEEL CORPORATION**
N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
*Unit of National Steel Corporation*


*Want Additional Product Information? See Page 19.*

been a strike in the industry that fact was no excuse for the company's failure to perform its contract and deliver the material promptly.

Relatively the same law is applicable to warehousemen who unintentionally damage stored goods.

In Washington Company v. Kent, 183 Pac. (2d) 514, it was shown that a corporation rented for $100 per month a room from a warehouse company in which it stored its products. Some months later the room was visited by inspectors of the Food and Drug department of the Federal Security Administration. They found the room infested by rats and that rat pellets, rat tracks, and rat nests were present. The officials of the corporation immediately protested to the warehouseman, who agreed to remedy the condition of the premises and eliminate the condition of infestation. He kept cats, but they merely added to the contamination. Later there was issued a libel and seizure of the corporation's products by the United States government. The corporation sued the warehouseman for damages. In holding the warehouseman liable the higher court said:



"The duty of the landlord to protect his tenant from annoyance by pests of this nature remained, because the tenant was powerless to protect himself. Had the tenant leased the whole building, the case would have been entirely different."

### *Gratuitous Warehouseman*

According to a recent higher court, when merchandise is stored for accommodation of the owner, the holder of the goods is a "gratuitous" bailee and is *not* required to use any care to safeguard the equipment.

For example, in Cook v. Bingman, 179 Pac. (2d) 470, a purchaser sued a man named Bingman for the sum of $40,000 actual damages and $10,000 punitive damage for the alleged conversion of certain equipment and supplies. The testimony showed that the purchaser had left in the care of Bingman a large quantity of tools, equipment and supplies. Sometime later the tools, equipment and supplies were stolen or disappeared.

The higher court held Bingman *not* liable.

### *Law of Price Cutting*

It is acknowledged that price cutting is not an evil in itself. On the other hand, some courts hold that the more intense the competition the greater the likelihood of advantage to the buying public. Quite obviously it is admitted by all courts that the right to freely contract is subject to legislative regulation in the interest of public health, safety, morals or welfare. But such legislation must not be unreasonable, arbitrary, or capricious, and the means selected must have a real and substantial relation to the object sought to be attained. Within these limitations *only* the state is free to adopt whatever economic policy may reasonably be deemed to promote public welfare, whether by promoting free competition by statutes aimed at monopolies or by curbing harmful competition by fixing minimum prices.

In Blum v. Engelman, 57 Atl. (2d) 421, the validity of Maryland's Unfair Sales Act was contested. The Unfair Sales Act, like the usual Fair Trade Act, is aimed at price cutting. The Fair Trade Act had its growth out of complaints that small retailers and independent wholesalers cut prices on nationally advertised products in order to attract customers with the object of selling them other merchandise along with the "loss leaders".

In this case suit was filed against a company that was selling Camel, Chesterfield, Lucky Strike and Old Gold cigarettes at $1.43 per carton, while the cost of these brands to him was $1.54.

The higher court refused to convict the company, saying:

"There is no reason why a merchant under ordinary circumstances should not have the right to make an absolute gift to his customers if he desires to show generosity or advertise his business. It is only when the object of price cutting is sinister that the sale of goods at less than cost may constitute an economic evil."

A review of late and leading higher court decisions discloses that Unfair Sales Acts in Pennsylvania and New Jersey Act were invalidated for the reason that they did not include *intent to injure* a competitor as an element of the offense. All variations of the law are discussed in the following higher court cases: Commonwealth v. Zasloff, 338 Pa. 457; Packard-Bamberger & Company, 123 N.J.L. 180; Associated Merchants of Montana v. Ormesher, 107 Mont. 530; State of Arizona v. Walgreen Drug Company, 57 Ariz. 308; and Wholesale Tobacco Dealers Bureau of Southern California v. National Candy & Tobacco Company, 11 Cal. (2d) 634.




According to a recent higher court, any attempt of sellers to fix prices of products violates the Sherman Anti-Trust Act, unless the testimony proves conclusively that such price fixing is authorized by valid laws.

For illustration, in United States v. United States Gypsum Company, 68 S. Ct. 525, the testimony showed facts, as follows: Certain manufacturers undertook to control prices and distribution in gypsum board by means of patent license agreements, or contracts. In these contracts the holder of the patents retained the right to fix the minimum prices for the product. Both the holder of the patents and the licensees were bound by the agreement. Also, the license could be cancelled for failure of the licensee to live up to arrangements. Bulletins were sent out which gave directions to the industry as to its prices and methods of operation.

Although the lower court refused to hold that the manufacturers had violated the Sherman Anti-Trust Act, the Supreme Court of the United States reversed the verdict, saying:

"The license agreements and the bulletins establish the conspiracy of the licensor and each licensee to violate the Sherman Act. . . . It is well settled that price fixing, without authorizing statutes, is illegal. . . . By the record now presented, violation of the Sherman Act is clear."

# Voltage loss goes down...

# ...when Hi-Efficiency FEEDER FA BUSDUCT goes up!

**HI-EFFICIENCY FEEDER FA BUSDUCT** offers a new high in the efficient distribution of power and light . . . *by reducing voltage loss to less than 2 volts per 100 feet at 80% power factor.*

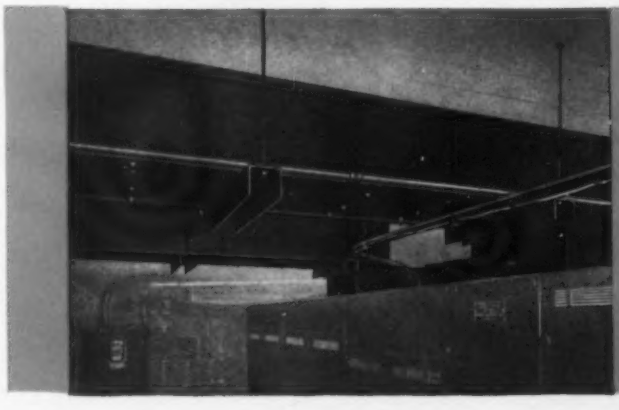
This modern, steel enclosed, ventilated-type electrical feeder is designed to provide a lifetime of just such efficient electrical service in the transfer of heavy current from service entrance to distribution center, from generators to switchboards or from switchboards to distribution centers.

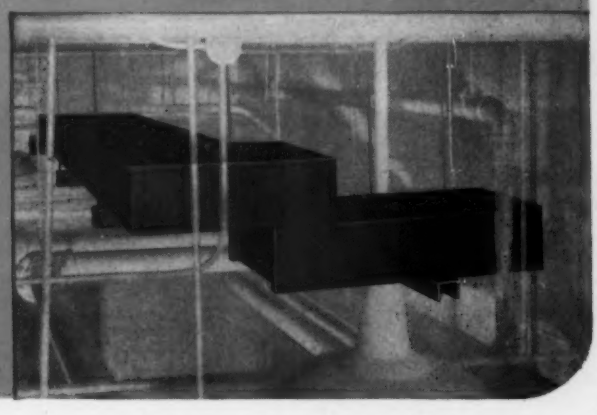
The photos shown are of a recent 4000 amp., 3 phase, 4-wire FA Hi-Efficiency Busduct installation. Note that sections can be run horizontal or vertical, up and around pipes or other difficult angles, and through walls, floors or ceilings.

In addition to its extreme flexibility, minimum voltage loss and reliability of service, Feeder FA Busduct is readily accessible, reduces maintenance and provides for future expansion.

Furnished in 2, 3 or 4 conductors, 600 to 4000 amps., 600 volts AC or less.







*Your FA Representative will gladly discuss the electrical advantages of a Busduct system for your plant. Or if you prefer, write for Busduct Bulletin 701.*

## Frank Adam Electric Co.

ST. LOUIS 13, MISSOURI

*Makers of* BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER

# New PRODUCTS · IDEAS

*Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.*

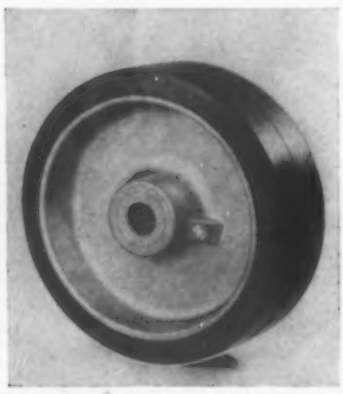
## CLUTCH FACING

Using new techniques which make it possible to match the specific clutch action of any clutch design, Johns-Manville, 22 E. 40th St., New York, N. Y., has brought out a new facing that features flexibility during installation.

The facing is known as S-W (spiral-wound) and is made of asbestos-metallic yarns. Its other advantages are described as: less variations in torque under a wide range of temperature and load conditions; minimum chatter in all engagements — forward or reverse; longer, trouble-free life and improved "cushion" clutch action in service. Winding of the yarn is close and uniform and the edges are clean and smooth, J-M says.

**Circle 100 on Reader Service Card, p. 19.**

## ALUMINUM CORE WHEEL

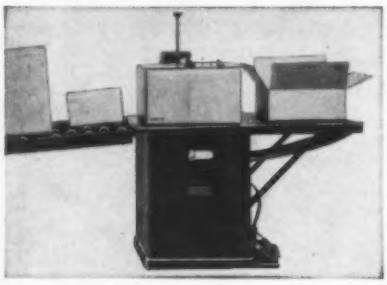


Aluminum core rubber tread industrial wheels in 6", 8", and 12" sizes are now available from The Bassick Company, Bridgeport, Conn.

Called "Alcore", the new wheels are said to be 50% lighter, just as strong, and to cost less than wheels with iron or steel cores. They also have a new, highly resilient, power-saving rubber-compound tread. Special sizes and tread compounds are available on quantity orders. The aluminum cores offer high strength, an easy-to-keep-clean surface, and modern appearance, Bassick says. Caged-type roller bearings are used in the wheels.

**Circle 101 on Reader Service Card, p. 19.**

## SEMI-AUTOMATIC CASE SEALER



The A-B-C Packaging Machine Corp., Quincy, Ill., is now producing a new semi-automatic case sealer that will handle cases of different widths, heights, and lengths, one right after another. No adjustment is necessary.

A-B-C, which calls its new machine the Sealall, says that it eliminates the necessity of storage conveyors or the down time required to change from one size case to another. The sealer will handle from 1 to 5 cases per minute.

**Circle 102 on Reader Service Card, p. 19.**

## SPHERICAL ROLLER BEARING PILLOW BLOCKS

The Fafnir Bearing Company, New Britain, Conn. is rounding out its line of anti-friction bearing industrial units with a series of normal and heavy-duty spherical roller bearing pillow blocks.

The move enables Fafnir to offer anti-friction bearing pillow blocks for practically every requirement of speed, load and operating condition encountered in modern industrial usage, particularly in mining, construction, petroleum, and other heavy-duty fields. The company says the new line is designed to handle heavy loads over long periods of service with economies in power and maintenance. The pillow blocks will be available in bore sizes ranging from 2 7/16" to approximately 8". They will be self-aligning, incorporating either felt or triple metallic labyrinth seals, and units will be built for either straight shaft or adapter type mounting.

**Circle 103 on Reader Service Card, p. 19.**

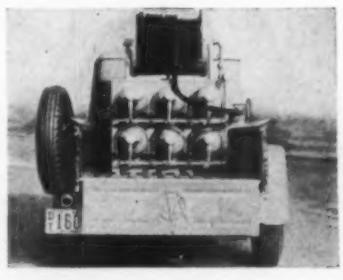
## INDUSTRIAL VACUUM CLEANER

A new industrial vacuum cleaner that weighs 23½ lbs. — only 5 lbs. more than some standard domestic cleaners — is now being marketed by the General Electric Company, Bridgeport, Conn.

The new cleaner is aimed to fill the needs of many commercial establishments, offices, and industrial buildings where frequent, thorough and fast cleaning is desirable, but where the larger cleaning units would be unnecessary. The model, designated AV1-189-WP, measures roughly 16" high and 13" in diameter, has a universal-type motor designed for heavy-duty cleaning requirements, and comes equipped with a complete set of attachments.

**Circle 104 on Reader Service Card, p. 19.**

## FIRE PROTECTION UNIT



Walter Kidde & Company, Inc., Belleville, N. J., has developed a compact carbon dioxide cylinder and hose reel unit for use by industrial and municipal fire departments it claims can easily be installed on 1-ton truck bodies.

The illustration shows the unit mounted directly behind the cab of a 1-ton Willys Jeep truck. Six 75-lb. capacity cylinders of carbon dioxide are arranged to discharge in two groups or three, through high pressure, flexible hose and a rapid flow Multijet nozzle. Carbon dioxide flows under its own power from cylinders through gas-tight piping into the hollow trunnion of the hose reel, then directly into the hose and out the discharge nozzle.

**Circle 105 on Reader Service Card, p. 19.**

(*Please turn to page* 152)

# MONSANTO SODIUM PHOSPHATES

high quality • prompt shipment • product variety

Strict quality control governs every step in the production of Monsanto Sodium Phosphates. Expanded plant facilities provide ample supply for prompt shipments. Take advantage of the convenience of one source of supply for all kinds of phosphates. Information and quotations will be sent promptly upon request. Mail the coupon, contact the nearest Monsanto Sales Office or write: MONSANTO CHEMICAL COMPANY, Desk L, Phosphate Division, 1786 South Second Street, St. Louis 4, Missouri.

| MONSANTO SODIUM PHOSPHATES AND SOME OF THEIR MANY USES | |
|---|---|
| | **TETRA SODIUM PYRO**—Soap, detergents, cheese, textile dyeing, bleaching and finishing, metal cleaning, oil-drilling mud, water treatment, water softeners, glass degreasing. |
| **MONO SODIUM**—Water treatment, textiles, acid cleaning compounds. | **TRI POLY**—Soap, detergents, water softeners, textile dyeing, bleaching and finishing, degreasing, metal cleaning, clay refining. |
| **DI SODIUM**—Cheese, leather, textiles, detergents, water treatment, dye, pigments. | **ACID SODIUM PYRO**—Baking powder, oil-drilling mud, electroplating. |
| **TRI SODIUM**—Water softeners, detergents, metal cleaners, water treatment, textiles. | **PHOSPHORIC ACID**—Used in metal cleaning and liquid acid cleaners. |

**DISTRICT SALES OFFICES:** Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

**OTHER MONSANTO PHOSPHATES**— Calcium phosphates, ammonium phosphates, potassium phosphates, ferro phosphorus, magnesium phosphates, aluminum phosphates, iron phosphates, alkyl acid phosphates, alkyl alkali phosphates, special phosphates.

MONSANTO CHEMICALS

MONSANTO CHEMICAL COMPANY
Desk L, Phosphate Division
1786 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation: _____ information and quotations on _____

Name _____ Title _____

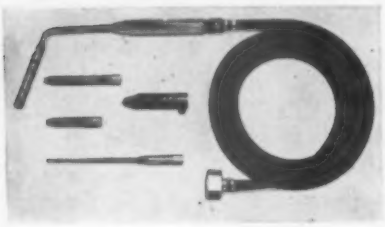
Company _____

Street _____

City _____ Zone ____ State _____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

## AIR-ACETYLENE OUTFIT



Air Reduction, 60 E. 42nd St., New York 17, N. Y., is offering the Airco No. 75 air-acetylene outfit for all kinds of small soldering, low-temperature brazing, heating or lead-burning jobs.

The outfit is sold with four tips: radiator soldering tip — slender tubing permits the flame to be used in confined places; No. 9 tip — when a medium flame is required; No. 10 tip — produces a pointed flame suitable for concentrated heating; No. 15 tip gives a brush type flame suitable for heating broad areas. The torch assembly, ruggedly constructed of brass, 5 feet of 3/16" flexible hose, a soldering iron and soldering copper complete the outfit. Typical uses are for joining solder-type fitting for copper installations; for soldering hard-to-reach electrical connections and in repair of radiators and batteries.

**Circle 106 on Reader Service Card, p. 19.**

## TOOL HOLDER

A tool holder with a new locking method which eliminates bit vibration and reduces tool breakage has been developed by the American Die and Tool Co., Reading, Pa.

The device, known as the Redy Rigid tool holder, clamps the carbide bit against the work surface with maximum rigidity by means of a lock block, screw, and lock nut arrangement which will not work loose, even on automatic machines, the company states. The tightness and rigidity of the holder are also said to provide up to 2 and 3 times greater production before regrinding. The holder is available for round, square, rectangular and triangular bits of all standard sizes. Custom-made tools are also supplied for special requirements.

**Circle 107 on Reader Service Card, p. 19.**

## VERTICAL UNIT HEATER

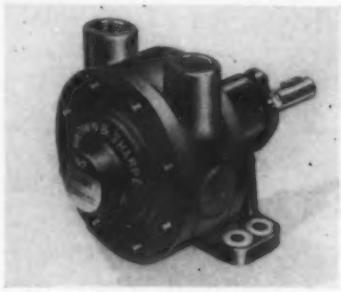


Grinnell Company, Inc., 277 West Exchange St., Providence 1, R. I., has added to its Thermolier Unit Heater line a new unit for vertical delivery of heated air from heights above the floor ranging from 9′ to 25′.

Six models are offered with heating capacities on the standard rated basis of 2 lbs. steam and 60° entering air temperature, ranging from 50,800 Btu per hour. With higher steam pressures and other entering air temperatures these capacities are increased. Grinnell says its patented internal cooling leg and close connection of a thermostatic trap assures continuous drainage and full heating capacity under all conditions of use. Three point suspension from adjustable swivel couplings simplifies suspension and alignment. Electric motors for the units are built to specifications. to handle the fans of special design.

**Circle 108 on Reader Service Card, p. 19.**

## AUTOMATIC REVERSING PUMPS



Brown & Sharpe Mfg. Co., Providence 1, R. I., is offering 9 styles and sizes of a new vane type pump, made as complete pumps or as stripped models.

Nos. 8021, 8061, and 8101 are the complete pumps having provision for mounting the foot at top or bottom or on either side. Designed for continuous operation against pressures up to 100 lbs., the capacities in gpm at 0 lbs. pressure are: for the No. 8021 from .6 to 2.5; No. 8061 from 1.4 to 5.4, and No. 8101 from 2.9 to 11.5. Similar capacities are available in stripped models with and without housings, designs which Brown & Sharpe says meet the demand of original equipment manufacturers for built-in or integral pumps. Examples of such applications are diesel engines, compressors, blowers, machine tools, speed reduction units, etc.

**Circle 109 on Reader Service Card, p. 19**

## INDUSTRIAL FLOOR SWEEPER

Handling Devices Co., Inc., 581 Boylston St., Boston 16, Mass., claims its Plantman motorless industrial floor sweeper will not only save from 25% to 75% in sweeping time, but will outwear push brooms five to one.

This machine, pushed easily at walking speed, collects as it sweeps, all in one operation. All kinds of dirt and debris are whisked into an aluminum hopper which is detachable. With no motor and few mechanical parts, the sweeper is easily and economically maintained, the company says. The Plantman weighs 48 lbs. and 60 lbs. respectively for the 20" and 28" units. The 28" machine with 2 side brushes will sweep a path 40" wide.

**Circle 110 on Reader Service Card, p. 19.**

## SINGLE PIN INSTANT START LAMP



Champion Lamp Works, Lynn, Mass. has developed a 40-watt T-12 single pin lamp designed specifically for installations having spring loaded sockets and instant start ballasts. The lamp length including sockets is 48".

The new lamp enables users for the first time to combine 4-foot and 8-foot lamp instant start fixtures having similar sockets and similar fixture cross-section and appearance. Greater flexibility of lighting design is effected, says Champion, with the advantage of instant starting. Starter switches are eliminated so that maintenance is simplified. The lamp is silicone coated to assure instant starting under high humidity conditions. It is available in white, 4500° white and warmtint.

**Circle 111 on Reader Service Card, p. 19.**

## DIESEL LOCOMOTIVE CRANE

To fill a need of industry for a diesel locomotive crane designed especially for lighter work, American Hoist & Derrick Co., St. Paul 1, Minn., has come out with a 10-ton model it claims offers minimum weight, moderate first cost, and efficient, economical service.

The crane, designated Model 410, is powered by an electric-starting diesel engine developing 72 hp at 1600 rpm, and has a rated capacity of 20,000 lbs. with a 40′ boom at 12′ radius. It has a full-vision cab, tandem band air-controlled clutches, and will perform all operations simultaneously. The machinery deck is compactly arranged, with all units easily accessible. Three speed selective transmission allows shifting from one speed to another while the crane is in motion.

**Circle 112 on Reader Service Card, p. 19.**

## BATTERY CELL FILLER



The Electric Storage Battery Company, Philadelphia, Pa., has come out with a new Exide battery cell-filler, in three sizes suited to railway equipment, Diesel-locomotives, and electric industrial trucks and tractors.

(*Please turn to page* 154)

# YOLOY SAVES . . .

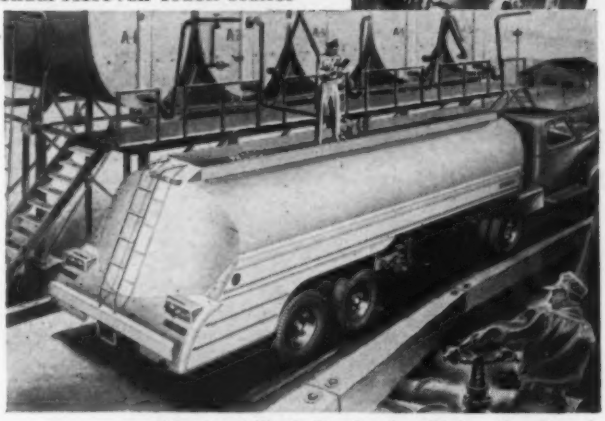


Yoloy framing of the
Fruehauf Aerovan Truck-Trailer

. . . *saves* WEIGHT . . .
SPACE . . . MAINTENANCE AND
REPAIR . . . FUEL AND OIL COST . . .
TIRE WEAR . . . OVER-ALL EXPENSE

USERS of Fruehauf Truck-Trailers enjoy the many advantages of lighter weight body construction made possible through the use of Yoloy high-strength steel.

Structural members of Yoloy are light in weight, yet have the strength of conventional steels much heavier and thicker. Yoloy reduces vehicular dead weight and permits extra payload. Being a nickel-copper steel of outstanding toughness, Yoloy is also highly corrosion resistant, shock resistant and durable. Yoloy is available in sheets, plates, strip, bars and tubular products.



Fruehauf Tank-Trailer has Yoloy Steel tank

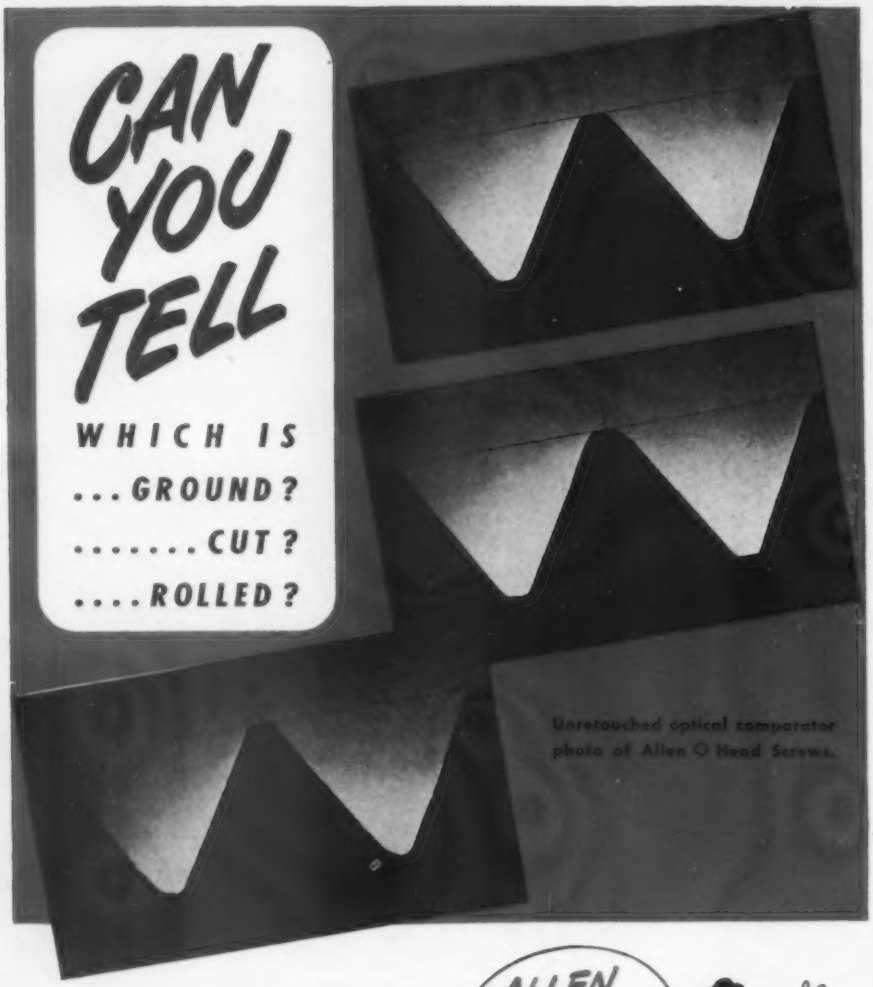
QUALITY V YOUNGSTOWN SERVICE

# Youngstown
## YOLOY STEEL

**THE YOUNGSTOWN SHEET AND TUBE COMPANY**
General Offices — Youngstown 1, Ohio

*Manufacturers of Carbon, Alloy and Yoloy Steel*
Export Office - 500 Fifth Avenue, New York

COLD FINISHED CARBON AND ALLOY BARS - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - WIRE - PIPE AND TUBULAR PRODUCTS - CONDUIT - RODS - SHEETS - PLATES - BARS - RAILROAD TRACK SPIKES.




Find it hard to decide? Don't waste your time because threading method is purely our problem. Your interest is in *Uniform Class 3 fit*. You get it every time when you specify Allen ⬡ Heads instead of just Allen-type screws.

We use all the accepted threading methods depending on the metal, the size and, in some cases, the application. We investigate every new development and incorporate the best into our manufacturing methods. Because we do not commit ourselves to any *one* method, we can give you the *extra* precision and uniformity that makes Allen ⬡ Heads fit smoothly and stay tight under the most gruelling service.




**SOLD ONLY THROUGH LEADING DISTRIBUTORS**

Write the factory direct for technical information and descriptive literature.




**ALLEN** ALLEN HEAD
**MANUFACTURING COMPANY**
**Hartford 2, Connecticut, U. S. A.**
NEW YORK, CLEVELAND, DETROIT, CHICAGO, LOS ANGELES

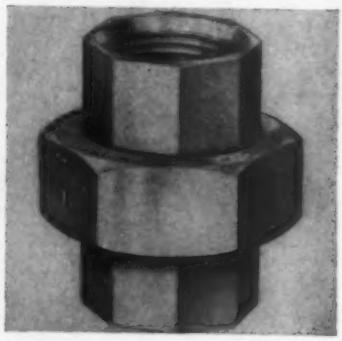
**FOR 40 YEARS THE BUY-WORD FOR SOCKET SCREWS**


(*Continued from page* 152)

The unit consists of a tube with a nozzle at one end and at the other a handle which is equipped with a valve operated by finger control. At the valve or handle end is an electric signal lamp which flashes a warning when the water in the cell reaches the correct level. The lamp is operated from 5 dry cells carried in a case attached to a belt, which goes around a maintenance man's wrist, or from a 115/6 volt transformer. The nozzle is molded of tough rubber to withstand severe operating conditions.

**Circle 113 on Reader Service Card, p. 19.**

## STEEL UNION



Attractive appearance, unusual sturdiness, high corrosion resistance, and convenience in installation, are features claimed for the new patented steel union for low-pressure, 150# service shown above. It is made by the E. M. Dart Mfg. Co., Providence, R. I.

Called PIC R, it has ends made from steel pipe coupling stock, polygonal shaped to permit the use of open-ended wrenches in close-quarter installations. All steel surfaces are zinc-plated, even under the special wedge-type bronze seat and on threads, to give 100% rust and corrosion protection.

**Circle 114 on Reader Service Card, p. 19.**

## FLUORESCENT LAMP STARTER

A new starter which will operate either 85- or 100-watt fluorescent lamps has been added to its line by Sylvania Electric Products, Inc., 500 Fifth Ave., New York, N. Y.

The starters, which are available in both FS and COP types, will start either size lamp even under the most extreme conditions, and will provide faster, more positive starting than existing types of switches used with standard 100-watt lamps, Sylvania says. Difficult conditions include such problems as low line voltage with an ungrounded fixture and current variations caused by differences in quality of commercial ballasts. Present designations of FS-6, FS-64, COP-6 and COP-64 will be continued for the new starters, with the cans marked "85W-100W". The new switches fit all standard fluorescent lighting fixtures and are approved by Underwriters' Laboratories, Inc.

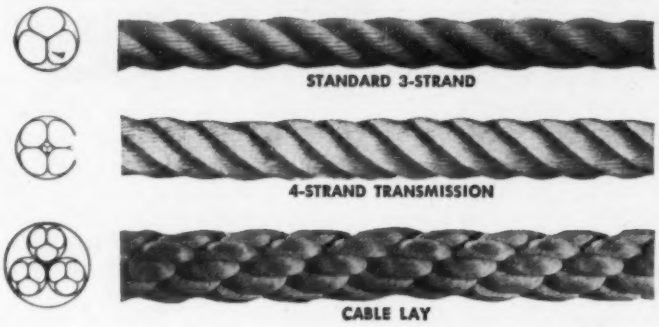
**Circle 115 on Reader Service Card, p. 19.**

(*Please turn to page* 156)

# ROPE SPECIFICATION SHEET

# "American Brand"
# PURE MANILA ROPE

**STANDARD AND SPECIAL LAYS IN A FULL RANGE OF SIZES**





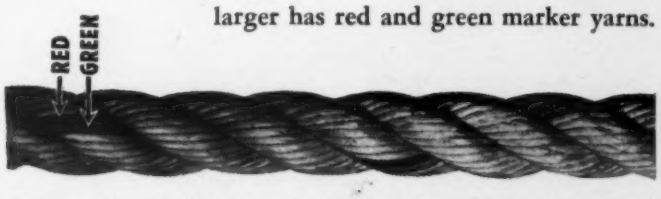

**WEIGHT AND STRENGTH CHART**

| Diameter | Circ. | Approx. Gross Weight per Coil | Approx. Length per Coil | Approx. Feet per Pound | Approx. Weight per Foot | Min. Tensile Strength of "American Brand" Manila Rope | Safe Working Strains |
|---|---|---|---|---|---|---|---|
| ins. | ins. | lbs. | ft. | | lbs. | lbs. | lbs. |
| 1/16 | 3/8 | 45 | 3000 | 66.6 | .015 | 450 | 90 |
| 1/4 | 3/4 | 55 | 2750 | 50.0 | .020 | 600 | 120 |
| 5/16 | 1 | 65 | 2250 | 34.5 | .029 | 1000 | 200 |
| 3/8 | 1 1/8 | 66 | 1620 | 24.4 | .041 | 1350 | 270 |
| 7/16 | 1 1/4 | 63 | 1200 | 19.0 | .053 | 1750 | 350 |
| 9/16 | 1 3/8 | 75 | 1200 | 16.0 | .063 | 2250 | 450 |
| 1/2 | 1 1/2 | 90 | 1200 | 13.3 | .075 | 2650 | 530 |
| 9/16 | 1 3/4 | 125 | 1200 | 9.61 | .104 | 3450 | 690 |
| 5/8 | 2 | 160 | 1200 | 7.50 | .133 | 4400 | 880 |
| 3/4 | 2 1/4 | 200 | 1200 | 6.00 | .167 | 5400 | 1080 |
| 13/16 | 2 1/2 | 234 | 1200 | 5.13 | .195 | 6500 | 1300 |
| 7/8 | 2 3/4 | 270 | 1200 | 4.45 | .225 | 7700 | 1540 |
| 1 | 3 | 324 | 1200 | 3.71 | .270 | 9000 | 1800 |
| 1 1/16 | 3 1/4 | 375 | 1200 | 3.20 | .313 | 10500 | 2100 |
| 1 1/8 | 3 1/2 | 432 | 1200 | 2.78 | .360 | 12000 | 2400 |
| 1 1/4 | 3 3/4 | 502 | 1200 | 2.40 | .418 | 13500 | 2700 |
| 1 5/16 | 4 | 576 | 1200 | 2.09 | .480 | 15000 | 3000 |
| 1 1/2 | 4 1/2 | 720 | 1200 | 1.67 | .600 | 18500 | 3700 |
| 1 5/8 | 5 | 893 | 1200 | 1.34 | .744 | 22500 | 4500 |
| 1 3/4 | 5 1/2 | 1073 | 1200 | 1.12 | .895 | 26500 | 5300 |
| 2 | 6 | 1290 | 1200 | .930 | 1.08 | 31000 | 6200 |
| 2 1/8 | 6 1/2 | 1503 | 1200 | .800 | 1.25 | 36000 | 7200 |
| 2 1/4 | 7 | 1752 | 1200 | .685 | 1.46 | 41000 | 8200 |
| 2 1/2 | 7 1/2 | 2004 | 1200 | .600 | 1.67 | 46500 | 9300 |
| 2 5/8 | 8 | 2290 | 1200 | .524 | 1.91 | 52000 | 10400 |
| 2 7/8 | 8 1/2 | 2580 | 1200 | .465 | 2.15 | 58000 | 11600 |
| 3 | 9 | 2900 | 1200 | .414 | 2.42 | 64000 | 12800 |
| 3 1/8 | 9 1/2 | 3225 | 1200 | .372 | 2.69 | 71000 | 14200 |
| 3 1/4 | 10 | 3590 | 1200 | .335 | 2.99 | 77000 | 15400 |
| 3 3/8 | 11 | 4400 | 1200 | .273 | 3.67 | 91000 | 18200 |
| 4 | 12 | 5225 | 1200 | .230 | 4.36 | 105000 | 21000 |

4 Strand wgts. about 7% more than 3 Strand

This is the very best Manila rope. It is made entirely of selected, long-fibre, Philippine hemp by one of the world's largest cordage mills. "AMERICAN BRAND" PURE MANILA ROPE reflects its quality in its appearance. It is clean, smooth and flexible, making it easy to rig and handle. It is always dependably uniform in size and strength. The special cordage solution used in waterproofing "AMERICAN BRAND" PURE MANILA ROPE imparts a stubborn resistance to moisture and drying out. It gives excellent service under the most difficult conditions. "AMERICAN BRAND" PURE MANILA ROPE is made in a complete range of sizes for utility and industrial uses.

For ready identification by the purchaser, all "AMERICAN BRAND" PURE MANILA ROPE 3/4" in diameter and larger has red and green marker yarns.




For copies of this page and a handy reference chart of the Weight and Strength table, write to Dept. P.

**AMERICAN MANUFACTURING COMPANY, BROOKLYN 22, N. Y.**

*Branch Factories:* **ST. LOUIS CORDAGE MILLS, ST. LOUIS 4, MO. • DELAWARE RIVER JUTE MILLS, PHILADELPHIA 48, PA.**

# Here's a Tip...

## for selecting the *RIGHT VALVE* for the *RIGHT PLACE*

If you just want an extra good valve for general service, then choose the "Renewo" with Regular Type Nickel Alloy Seat and Disc. It's tops in its class.

Or, perhaps you have a throttling condition such as drain, drip, water column blow-down and like service where regular seats and discs tend to cut out . . . use the "P" (Plug Type) "Renewo" with 330 Brinell "NS 5" Alloy Seat and Disc. Here you have high resistance to wear and corrosion.

And for severe throttling and erosive service, particularly where abrasive conditions are present . . . the "PS" (Plug Type) "Renewo" with 500 Brinell Stainless Steel Seat and Disc will solve the problem.




"Renewo" Globe Valve Regular Type, "P" Type or "PS" Type

**LUNKENHEIMER "RENEWO" VALVE *Threesome***

**1. REGULAR TYPE** *"Renewo"* Nickel Alloy Seat and Disc for general service.



**2. "P" (PLUGTYPE)** *"Renewo"* "NS5" Nickel Alloy 330 Brinell Seat and Disc for throttling, drain, drip, water column blow-down and like service.



**3. "PS" (PLUG TYPE)** *"Renewo"* Stainless Steel 500 Brinell Seat and Disc for close throttling and other severe erosive service.



*and look at these money saving extra features*

1. Each type of seat and disc is interchangeable one with another, making it possible to convert a regular type valve into a plug type without taking the valve out of the line.

2. Available in 200 lb. S.P. as well as 300 lb. S.P. making it unnecessary to purchase a 300 lb. valve for 200 lb. service.

*The "Renewo" Threesome is fully described in Circular No. 577. A copy is yours for the asking . . . from your Lunkenheimer Distributor or direct from us.*



ESTABLISHED 1862

THE LUNKENHEIMER CO.

"QUALITY"

CINCINNATI 14, OHIO, U.S.A.

NEW YORK 13 · CHICAGO 6 · BOSTON 10 · PHILADELPHIA 34

EXPORT DEPT. CINCINNATI 14, OHIO, U.S.A.


## HYDRAULIC HAND LIFT TRUCK



Combining features of previous models for greater efficiency and economies in manufacture, Revolvator Co., North Bergen, N. J., is now producing a Red Giant hydraulic hand lift truck for use with single or double faced pallets.

Ease of operation and maneuverability, including entry into and exist from any standard pallet are claimed for the new truck. By a slide plane arrangement, the forks are raised and lowered, permitting the dual wheels in each fork to roll smoothly over sills, cross members of double faced pallets, and up ramps. An oversize lift ram, operating vertically, lifts a load a full 4" without effort when the operator pumps the handle, using long or short strokes. Handle rotates 360° and will lift in any position.

**Circle 116 on Reader Service Card, p. 19.**

## 7-IN-1 PORTABLE SAW

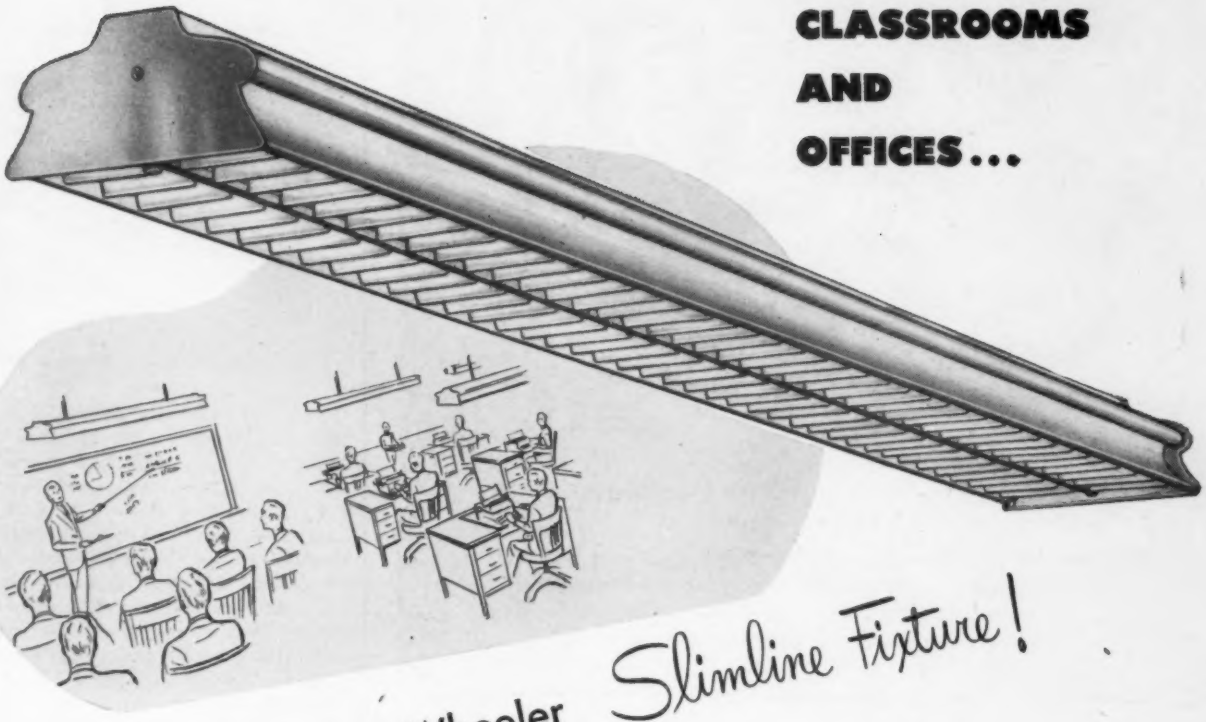


A new portable power saw, called Whiz-Saw and made by Forsberg Mfg. Co., Bridgeport, Conn. can be used as a rip, crosscut, scroll, keyhole or coping saw. And when attached to the Whiz-Saw table, it will take the place of an expensive band or jig saw, Forsberg claims.

The saw will cut wood, bone, plastic, fibre board, hard rubber, and other composition materials up to 1" thick. The company calls it the only saw ever made that can make inside cuts without first

(*Please turn to page* 158)

**PUT THIS NEW** *"Ocular Comfort"* **INTO CLASSROOMS AND OFFICES...**

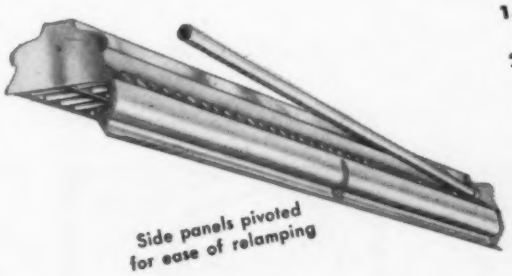


it's the latest Wheeler *Slimline Fixture!*

NOW you can get eight outstanding fixture features, all in one new Slimline Fixture. Wheeler's "Ocular Comfort" represents the accumulated design and engineering skill of almost 70 years in the specialized manufacture of lighting equipment. It meets a demand for:

1. **All metal construction** ... *no glass or plastics ... nothing to break or distort*
2. **Indirectly-illuminated side panels** *of smooth metal ... easily cleaned—no dirt-catching perforations*
3. **Low surface brightness**
4. **Pivoting side panels** ... *for ease of relamping (see illustration at left)*
5. **One-piece bottom louver** ... *never needs to be disturbed except for access to operating equipment*
6. **Better-than-average shielding** ... *35° both crosswise and lengthwise of fixture*

**7-8. Pleasing appearance** *plus high efficiency*



Side panels pivoted for ease of relamping

"Ocular Comfort" Slimline Fluorescent Fixtures are made for use with the 75 watt, 96" T12 Slimline lamp and the 40 watt 48" T12 single pin lamp. Both lamps instant-starting type. Lampholders—depressable type. Be sure to get all the details of this new product of Wheeler "Skilled Lighting". Write, *Wheeler Reflector Company, 275 Congress St., Boston 10, Mass.* ... also New York, N. Y. Representatives in principal cities.

**Distributed Exclusively through Electrical Wholesalers**

**Wheeler REFLECTORS**

SKILLED LIGHTING

**MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881**

**Just Remember the Buy-Word in—**

*The Case of the Dejected Dog*




**Purchasing Agent:** *My dog didn't win even third prize! The judge said his ears are too ragged . . .*

**Draftsman:** *Dog-eared, huh? Hey, that's what wear and tear do to our tracing paper drawings at the shop! There'd be no more of that if you would order Arkwright Tracing Cloth. It stands up under time and use.*

**Yes, Arkwright has long been the buy-word for permanence in drawings. Unlike tracing paper, it does not crack and tatter with repeated use—nor become opaque and brittle with time as a file reference record. There are six big reasons why Arkwright Tracing Cloth is the better buy for *any* drawing that may be needed later. Keep a supply ready—it's a paying investment!**

**Send for generous working samples of Arkwright and see how amazingly it passes the critical tests of fine draftsmanship. Arkwright is sold by leading drawing material dealers everywhere. Arkwright Finishing Co., Providence, R. I.**

***The Big Six Reasons Why Arkwright Tracing Cloths Excel***

1. Erasures re-ink without feathering.
2. Prints are always sharp and clean.
3. Tracings never discolor or go brittle.
4. No surface oils, soaps or waxes to dry out.
5. No pinholes or thick threads.
6. Mechanical processing creates permanent transparency.



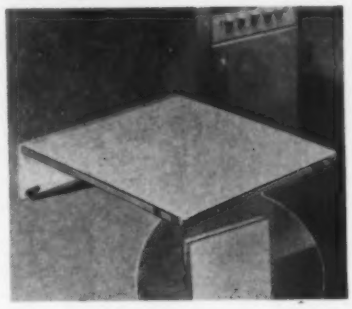

**ARKWRIGHT**
**TRACING CLOTHS**
**AMERICA'S STANDARD FOR OVER 25 YEARS**

(*Continueh from page* 156)

boring a starting blade hole. Weight is 3½ lbs. The table is sold as an accessory and comes with mitre-gauge and rip-fence. The all-metal stand measures 11¾" x 13" and when mounted to bench or in vise stands 5¾" high.

**Circle 117 on Reader Service Card, p. 19.**

## PLASTIC LAMINATED MATERIAL

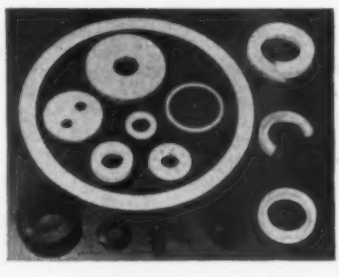


Woodall Industries, Inc., 2025 S. Calumet Ave., Chicago 16, Ill., has a new material it thinks will have a wide product application throughout industry.

The material is made of a plastic laminate, impregnated on ⅛" Masonite Tempered Presdwood. Woodall says the plastic surface is tough, washable, and durable, and will not peel, chip or crack. It resists, heat moisture, abrasion and impact and protects the color pattern to prevent dulling or fading. Known as Lamidall, the material is made in panel sizes up to 4' x 12', and can be fabricated to specification in desired shapes and sizes for parts or finished products. It can be sawed, shaped, nailed, punched or drilled with standard wood-working tools or equipment. It can be sawed, shaped, nailed, punched or drilled with standard wood-working tools or equipment. The reverse side is smooth and grainless, and receptive to adhesives or any type of finish. Continuous process manufacturing permits an unusually low price, Woodall states.

**Circle 118 on Reader Service Card, p. 19.**

## MOLDED PACKING MATERIAL



Chemlon, the new chemically inert packing material introduced by Crane Packing Co., 1800 Cuyler, Chicago, Ill., is now available in molded form in a wide variety of shapes.

In the new form, Chemlon retains the properties of the braided packing. It is not attacked by any acids or alkalis, and

(*Please turn to page* 160)




# *In plant after plant*... ONE superior lubricant serves ALL grease applications

That's a strong statement . . . hard to believe if you have been paying for a number of custom, special-purpose greases. Such custom greases are designed to fill just one or two special requirements.

But—Shell's new Alvania, a multi-purpose grease, can give you *all* of the desirable qualities, *in equal or higher degree. Check* these qualities...and remember that Shell Alvania grease has them *all:*

**Pumpability even at low temperatures**
**Superior mechanical stability**
**Very high melting point**
**Exceptional oxidation stability**
**Resistance to water**

*It all adds up*—to more efficient lubrication . . . much lower inventory and application cost . . . *fewer* applications per year.

The Shell Lubrication Engineer will be glad to study your lubrication requirements, and to advise how you can enjoy the economies that many plants are now getting through use of this cost-cutting grease.

Write: Shell Oil Company, 50 West 50th St., New York 20, N. Y., or 100 Bush Street, San Francisco, California.

SHELL

## SHELL ALVANIA GREASE

# Lest we forget, Mr. Busy Executive...




And, of course, management's most important responsibility is the promotion of *profits* through more efficient production and better control of costs . . . and that's where we come in.

General Engineered Shipping containers are lightweight, compact, extra-strong. They save packing and shipping costs. They are quickly and easily assembled. They save man-hours, help increase production. They are saving many firms substantial amounts month after month, year after year.

Let us show you how these same savings can be effected in your own business.

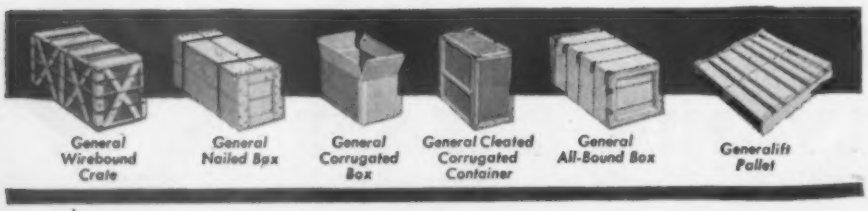
Our two Designing and Testing Laboratories are available for the improved packing of your products. They are equipped with the most modern testing apparatus and staffed by experts with many years of experience in designing more efficient shipping containers.

**General BOX COMPANY**
★★★★★
**. . . engineered shipping containers**

**GENERAL OFFICES:** 48 West Illinois Street, Chicago 10.
**DISTRICT OFFICES AND PLANTS:** Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon, Natchez.
Continental Box Company, Inc.: Houston, Dallas.




*Send for your free copy of "THE GENERAL BOX"*





(*Continued from page* 158)

stands up for long periods of time under conditions never before successfully sealed by packing, according to Crane. It is effective to temperatures of 450F. The company says its special molding process results in high flexibility, which is especially helpful in installation of the packing rings. Outstanding electrical properties of the material include low power factor and low dielectric constant. Among forms now furnished are washers, bushings, rings, self sealing "V" cross-section rings, ring gaskets.

**Circle 119 on Reader Service Card, p. 19.**

## UTILITY STORAGE BOX



A lot of steel storage boxes are merely descendants of the old wooden factory box, and just about as unwieldy, according to North American Industries, Inc., 2100 N. Kolmar Ave., Chicago, Ill. So North American is bringing out a new utility storage box it says will take advantage of all the new trends in bulk movement, stacking, etc. made possible by the advent of fork-lift trucks, as well as overhead cranes and hand-operated pallet trucks.

Here's what the boxes offer: full 4 sides utility with truck lifting forks; "battleship" bottom construction; self positioning stacking lugs; 4 corner lifting hooks; lifetime construction of 12-gage hard temper steel; arc welded joints throughout; full 64 cu. ft. capacity; dimensions—4′ long, 4′ wide, 4′ deep.

**Circle 120 on Reader Service Card, p. 19**

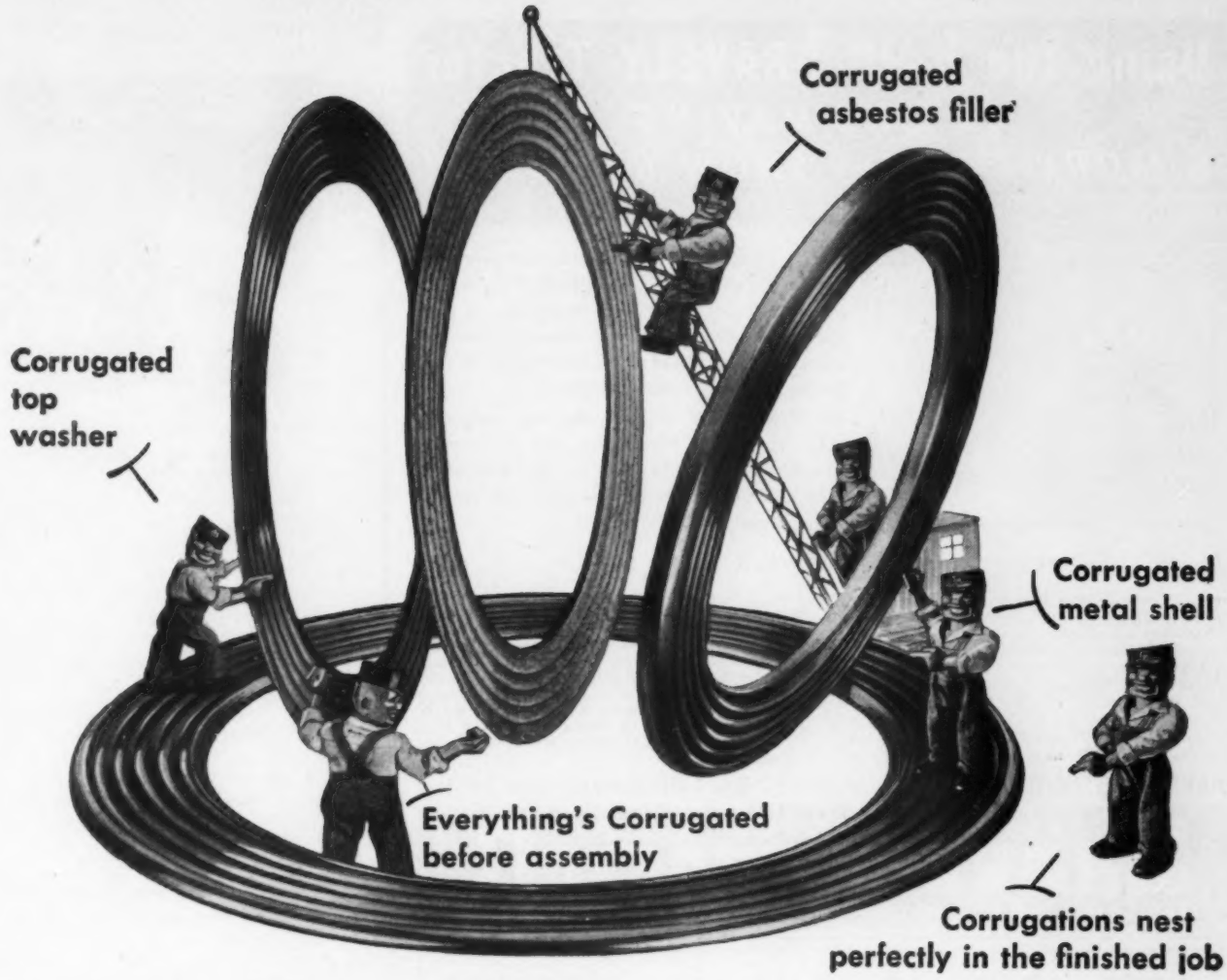
## BATTERY CHARGER

Hertner Electric Company, Cleveland, O., has a new type compact battery charger it says is very easy to use—merely insert the charging plug in the battery receptacle and turn one switch.

The unit, which Hertner calls the KX Charg-O-Matic, is a fully automatic motor-generator type, single circuit, requiring no base, bench or stand. Automatic charge control is said to assure positive shut-down when the battery is fully charged. An electrically driven selective time clock switch provides automatic cut-off at the end of the charging period. If necessary, the time clock switch can be turned back to zero. The Charg-O-Matic will charge one lead-acid battery in 8 hours or less and one nickel-alkaline battery in 7 hours or less, Hertner says.

**Circle 121 on Reader Service Card, p. 19.**

(*Please turn to page* 162)




# Greater Strength... More Resilience... Perfect Sealing!

## ...with this corrugated metal-asbestos gasket

IN THE FABRICATION of the Goetze Style 926 metal-asbestos gasket shown here, each of the three units is corrugated *individually* to assure perfect "nesting" and matching in the assembled gasket.

This results in greater strength and resilience . . . and better sealability under high pressure. For these reasons, this gasket is recommended and widely used in chemical plants, power stations and oil refineries, especially where destructive elements are encountered.

Goetze custom-made gaskets—such as Style 926 above—pay off in the long run because of the meticulous care that is taken with every detail of construction . . . care and skill that is based on more than sixty years of meeting the specialized gasket requirements of industry.

If you're seeking a gasket that will not have to be replaced so often—in standard or non-standard sizes—we will gladly furnish estimates and recommendations on request. Write Johns-Manville, Box 290, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCT

**Johns-Manville Goetze Gaskets**

THERE'S A JOHNS-MANVILLE PACKING OR GASKET FOR EVERY SERVICE

# Using the 5-HP GRAVELY Tractor
## IS LIKE HAVING 8 MORE MEN for SNOW REMOVAL!



Yes . . . industrial and city records prove that one man, with one GRAVELY Tractor and its Snow Plow attachment can move as much snow as eight men by hand—in the same length of time! Think of the saving in man-hours, in maintenance dollars!

The GRAVELY is compact and maneuverable. It is easily handled in those close places—walks, drives, loading areas—where the only other practical way to move the snow is by expensive hand labor.

### 19 ATTACHMENTS FOR YEAR-ROUND USE

Snow Removal is only one of the 19 jobs the Gravely can do for you. Change attachments — it takes only a minute — and you do all these other maintenance jobs quicker, easier, better: *Power Sweeping, Lawn Mowing, Weed and Tall Grass Mowing, Spraying, Hauling, Light Bulldozing, Landscaping.*

The GRAVELY Tractor, though moderately priced, is the world's finest small tractor. Auto-type differential for easy handling, full flow of power. Two speeds forward and REVERSE. Direct Gear Drive to all power attachments — no chains or belts to wear or slip. All attachments quickly changed. All moving parts fully enclosed for long life and trouble-free operation . . . The Gravely is backed by 28 years of proven service. National Sales and Service organizations as near as your phone. Write today for FREE CATALOG, prices and name of nearest dealer.

**GRAVELY MOTOR PLOW & CULTIVATOR CO., Box 1183, Dunbar, West Virginia**

THE POWERFUL 5-HP
# GRAVELY TRACTOR
DOES THE JOB RIGHT—WITH POWER TO SPARE!

## WILL YOUR NAME BE REMEMBERED?

GITS
LIFETIME REMINDERS
Quality Plastic Products

To cement friendship and esteem—to bring a warm glow of remembrance . . . give your customers and prospects a really useful reminder—a Gits Quality Plastic Product, permanently imprinted with your name and business. The cost is small . . . the value high . . . and, best of all, they won't forget!



**GITS "ONE-HAND" KNIFE**
Highest quality carbon steel blade, safelocks in 5 positions. Unbreakable plastic handles in six lustrous colors.

**GITS RAZOR-NIFE AND KEY CHAIN**
Razor blade with a safety handle. Refillable. Assorted lustrous colors.

**GITS LETTER OPENER**
Transparent, with offset magnifying handle. Endurably sharp edges.

**GITS FLASHLIGHTS**



Famous "Mile of Light" in three popular styles. Unbreakable plastic. "Plastic Eye" (Regular and Junior) and "Super Right Angle". Shatterproof lens, Prefocused with nickel plated solid brass reflector. Brass 3-way switch. Six permanent colors.

ASK your specialty jobber to show you the complete line of Gits Quality Plastic Products, or write direct, using coupon below.

GITS
*Molding Corporation*
4600 WEST HURON ST., CHICAGO 44, ILLINOIS

COUPON

GITS MOLDING CORP., 4600 W. Huron St., Chicago 44, Ill.

Gentlemen:

☐ Please send me at once sample of the item I have checked below and prices in ..... quantity.

☐ Plain ☐ With imprint
☐ "Plastic Eye" Flashlight
☐ "Plastic Eye Jr." Flashlight
☐ "Super Right Angle" Flashlight
☐ "One-Hand" Knife
☐ Razor-Nife and Key Chain
☐ Letter Opener
☐ Nail File
☐ Thimble
☐ Stir Stix
☐ Bracelet Key Holder
☐ Shoe Horn
☐ Key Tag
☐ Match Pac

☐ The items you illustrate do not fully satisfy my needs, so please send me your complete catalog and full information.

(PLEASE PRINT)

NAME .....
COMPANY .....
ADDRESS .....
CITY ..... ZONE .. STATE .....


### UNIQUE COIL-TYPE CLAMP

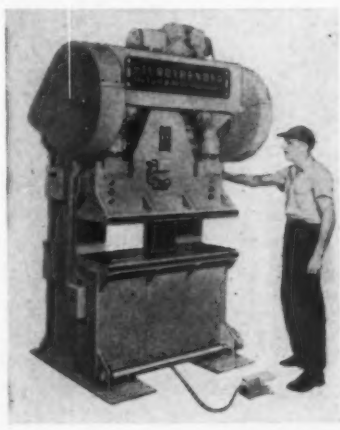


A new and unique industrial clamp, called the "neg'ator clamp", for maintenance, production, laboratory and display use, has been developed by the Hunter Spring Co., Lansdale, Pa.

The clamp has the following outstanding characteristics: automatic take-up; constant clamping pressure regardless of the thickness of the object held; enormous dimensional range between clamp heads; full clamping pressure inherent in single part (without externally applied forces); extreme flexibility in locating clamping pressures (head pressures need not always be opposed); and coil-form heads or jaws (can act as cord or tubing guides or as a base for freely supporting the clamped object). Hunter says the clamp has a seemingly unlimited number of applications: as a holder; as a fixture for merchandise display; as a jig for positioning component parts; as a vise-clamp for gluing, bonding and fitting work; as a hanger for pipe and wire, etc. It is currently available in sizes covering a range of clamping pressures from 2 oz. to 20 lbs. in 8 increments. In breadth they range from ¼" to 2". Special pressures and sizes are available upon a development basis.

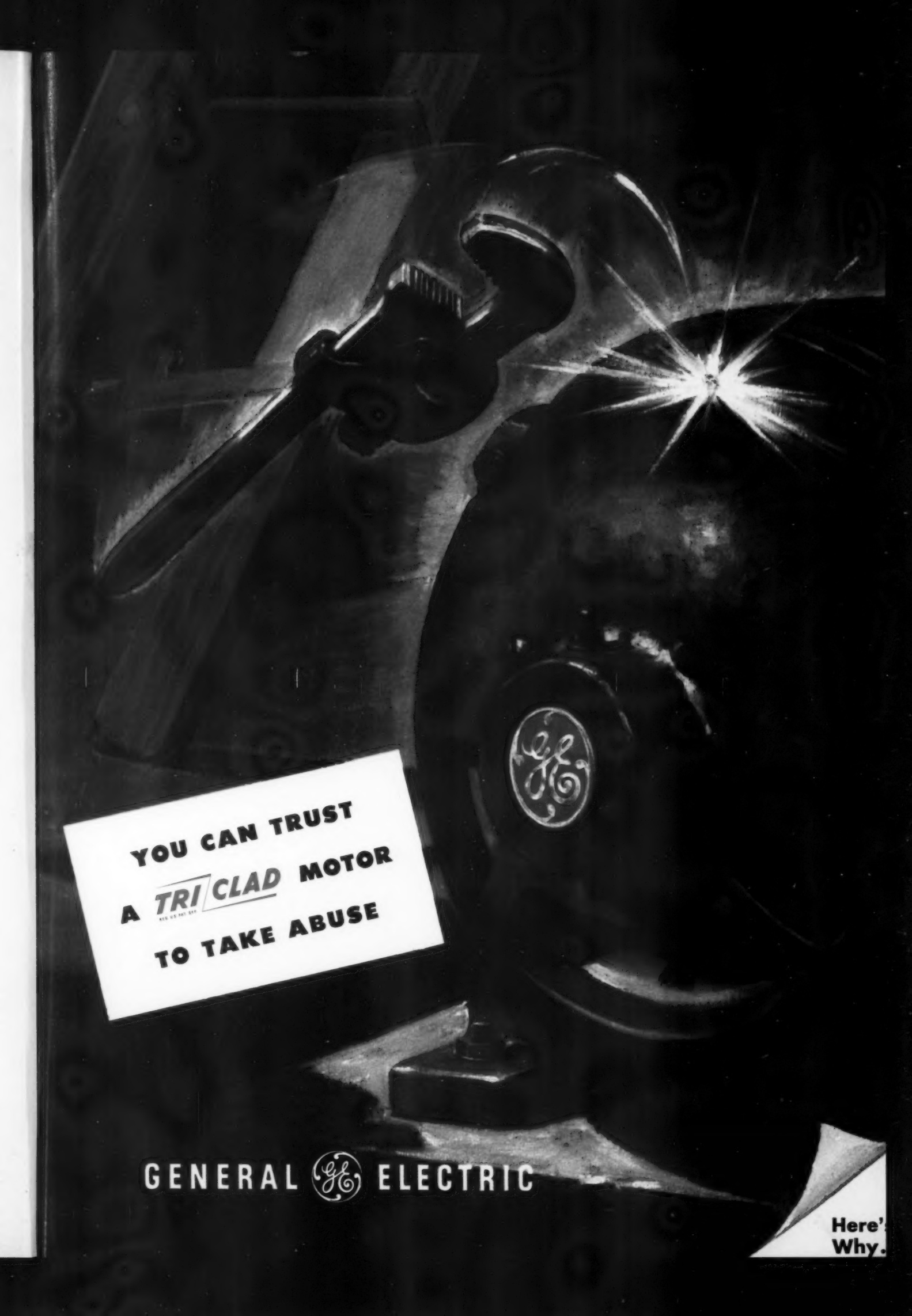
**Circle 122 on Reader Service Card, p. 19.**

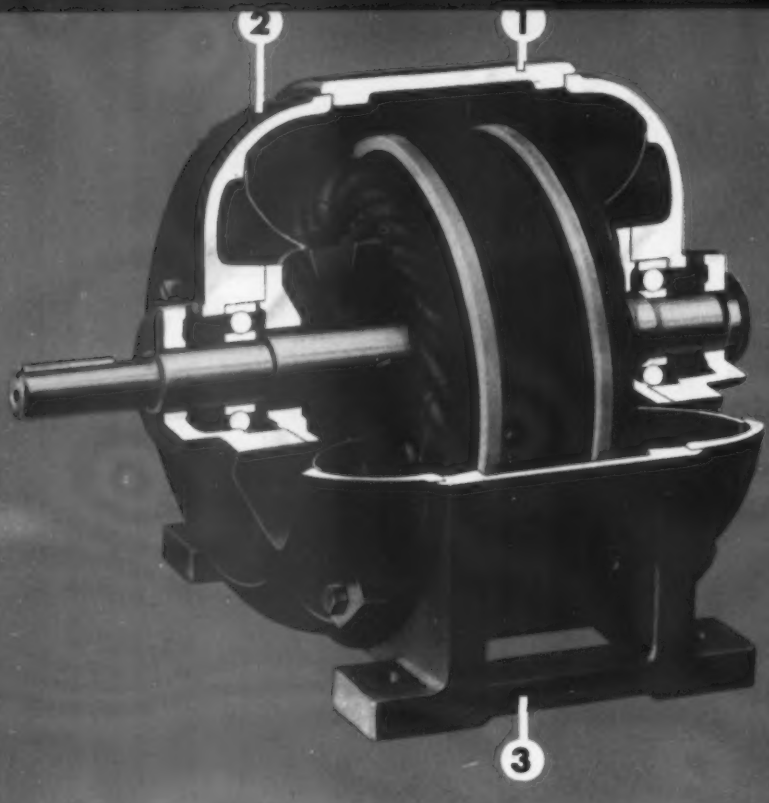
### HIGH SPEED PRESS BRAKE



A new high speed press brake featuring speeds up to 80 strokes per minute and wide bed and ram areas for the mounting of punching and blanking dies it the latest product of The Cyril Bath Co., 7042 Machinery Ave., Cleveland 3, O.

(*Please turn to page* 165)


YOU CAN TRUST
A TRI CLAD MOTOR
TO TAKE ABUSE
GENERAL ELECTRIC
Here's
Why.




Notice the thick cross sections of a Tri-Clad's husky cast-iron stator frame (1) and end shields (2) . . . the integrally cast feet (3). Here you have a *rigid structural unity* that no other general purpose motor we've seen can match. Distortion of bearing alignment is well nigh impossible, even by severe blows, careless installation, or the heavy continuous radial loads some industrial drives impose. Notice, too, how Tri-Clad double-end ventilation provides *uniform* "air conditioning" throughout the motor.

# You can trust a TRI/CLAD motor to take abuse

Teeth-rattling blows—accidental jarring—dripping liquids—they're all in a day's work for a Tri-Clad motor—the toughest general-purpose motor that hard-headed plant management can buy.

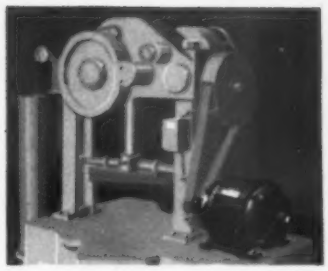
The cast iron structure which today protects more than a million and a half Tri-Clad motors, is one big reason for its stamina. It absorbs the shock of accidental blows and falling objects encountered in rigorous industrial service. It provides vastly superior resistance to rust and corrosion. Moreover, cast iron won't take on an injurious permanent "set"; thus it assures accurate shaft alignment and a permanent air-gap for the life of the motor. Thick-ribbed cast-iron end shields, too, take more than their share of punishment.

Want to standardize on a line of motors that can really **TAKE ABUSE?** Local stocks of Tri-Clad motors in your area mean **QUICK DELIVERY.** *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

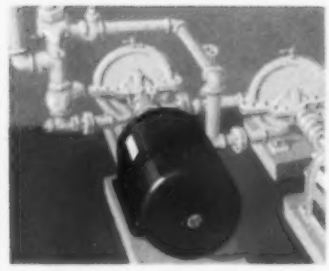
GENERAL ELECTRIC

760-11

## YOU CAN'T BEAT TRI/CLAD EXTRA PROTECTION



**G-E open (dripproof) induction motors** for constant-load, constant-speed applications. From 1 to 2000 hp.



**G-E totally enclosed motors** for outdoor operation, in abrasive dusts, or corrosive fumes. From 1 to 1000 hp.



**G-E vertical induction motors** for pump drive, in streamline design. From 1 to 500 hp.



**G-E capacitor motors** for use on fans, blowers, pumps and compressors, with single-phase power. From ¾ to 5 hp.



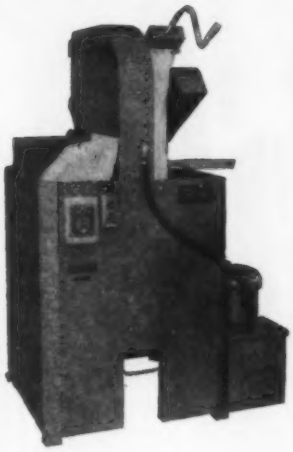

Look for this **EXTRA** on the motor you buy!

(*Continued from page* 162)

The unit is equipped with a press-control safety mechanism which may be used in continuous operation or to stop automatically at the top of the stroke. Overload protection is also provided. Accidental excessive loads automatically throw out the clutch, preventing damage to press or dies. The press shown is of 35-ton capacity, with die area of 15″ x 42″. Larger models are available. Operating cost reductions are achieved by combining two or more operations in sequence, and by reducing equipment and floor space requirements, the company claims.

**Circle 123 on Reader Service Card, p. 19.**

## ABRASIVE CUTTING MACHINE



A new low-cost bar type abrasive cutting machine has been announced by the Campbell Machine Division of American Chain & Cable Co., Inc., Bridgeport, Conn. Known as Model 15, it is available with either a 3 hp or 5 hp motor, and each type may be arranged for either wet or dry cutting.

The machine is suitable for general purpose work and will cut tubes, angles, bar stock etc., within its capacity with a minimum of burr by use of a suitable abrasive wheel. It handles ferrous or non-ferrous material, including corrosion resisting steels, hardened or annealed steels. It cuts light wall tubing of all types up to 1½″ diameter and solid bar stock up to ¾″ diameter with the 3 hp motor, or light wall tubing up to 2″ diameter and solid bar stock up to 1″ diameter with the 5 hp motor.

**Circle 124 on Reader Service Card, p. 19.**

## ROOF SURFACING MATERIAL

"The metal roof that flows on" is the way Abesto Mfg. Corp., Michigan City, Ind. describes its new double action roof surfacing that insulates and protects at the same time. The material is called Fiberated Lumiclad.

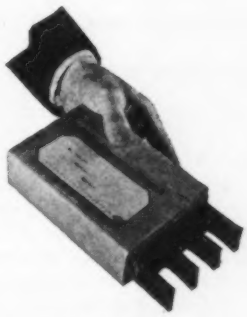
Abesto claims the product is a revolutionary coating because the aluminum flakes it contains are bound tightly to fine asbestos fibre by a waterproofing

(*Please turn to page* 166)




# WHICH ADVANTAGE

***is most important to you when specifying grating?***



1 Rigid one-piece construction—easy to install?

2 Maximum open area for light and air?

3 Easy to paint—all surfaces accessible?

4 Non-slip Twisted Cross-Bar?

5 Self-cleaning—no sharp corners to clog?

*Blaw-Knox Grating Has Them All!*

***WRITE TODAY . . .***

**For this "paper-weight-size sample" on your business letterhead, so that you can have a "close-up" of Blaw-Knox Grating Construction.**

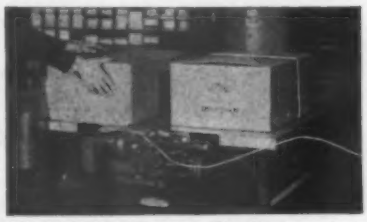
**BLAW-KNOX DIVISION**
**OF BLAW-KNOX COMPANY**
**2075 Farmers Bank Bldg., Pittsburgh 22, Pa.**
***Offices in Principal Cities***

**BLAW-KNOX** ELECTROFORGED STEEL **GRATING**

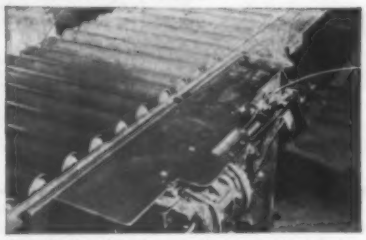
## "The new twist" for your strapping operation ...GERRARD!



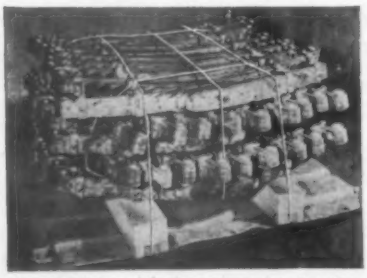
Gerrard Round Steel Strapping is adaptable to a wide variety of applications. Model TA is used to bundle stove pipe elbows into a firm, neat package that is easy to handle.



Model Q is semi-automatic. Operator just drapes Gerrard Round Steel Strapping around the carton and presses thumb lever. The machine tensions the strap, forms its own twisted seal, cuts the strap neatly, and sets the strapping for the next operation. Above, one strap secures bread cartons.



Standard table for semi-automatic Model Q is not used here. Head of Model Q is set into side of conveyor, saving handling time and speeding bundling procedures. Model Q makes 12 to 15 ties per minute.



Auto springs might be awkward to handle, but Gerrard-strapped to wooden skids, they make an easily transported pallet. Sturdy galvanized Gerrard Round Steel Strapping holds springs and skids securely.

The services of Gerrard engineers are available without charge to help you solve packaging problems. Write for a free copy of Blue Book of Packaging. **Gerrard Steel Strapping Company, 4713 So. Richmond St., Chicago, Ill.**

USS **GERRARD ROUND STEEL STRAPPING**

UNITED STATES STEEL


(*Continued from page* 165)

base and held in suspension by a special booster. Heretofore, it says, all such materials have worked on the principle of "float", wherein the aluminum flakes float to the top and the carrier sinks to the bottom in the application coat. The coating's silver color acts as a reflector of heat rays, leaving the interior space directly under the roof as much as 10° to 20° cooler than the same interior space covered by a black roof, the company claims.

**Circle 125 on Reader Service Card, p. 19.**

### FLUORESCENT FIXTURE HANGER



You get double assurance of permanently safe suspension of fluorescent lighting fixtures with the new "SFH" fixture hanger, says the Appleton Electric Co., 1701 Wellington Ave., Chicago 13, Ill.

The hanger has a pair of snug fitting clips which hooks firmly to the ears of the outlet box, supporting the fixture in the event mounting screws work loose or rust through. It may be mounted in place without removing screws from the outlet box. After screw heads clear holds, a ten-degree turn locks the hanger in place with safety clips behind ears in the outlet box. Two sliding clips are provided to take chains for suspending fixture. Fixture may be swung in any direction by moving the two clips to any position.

**Circle 126 on Reader Service Card, p. 19.**

### VIBRATION MOUNTS

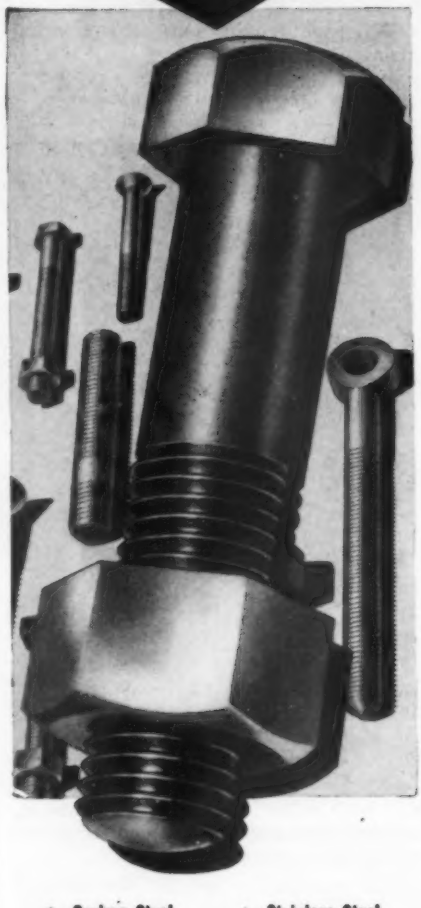
Finn & Company, 2850 Eighth Ave., New York 30, N. Y., calls its new CM-H vibration mount a complete and job-proven development for isolating horizontal and rotary machinery vibrations. This makes it suitable for use with precision grinders, lathes, generators, pumps, jig borers, etc., the company says.

Vibration isolation and attendant noise reduction are accomplished through a "rubber-in-shear" principle, which floats a specially designed steel channel in rubber between two steel angles. Finn claims that the correct angularity between the steel parts and the rubber bonded to them enables the isolator to approximate the "flat" spot on a stress-strain curve of relative slope. The units, with ample surface mounting areas, afford uniform deflection and a load range from 600 lbs to 10,000 lbs. Overall height is only 2".

**Circle 127 on Reader Service Card, p. 19.**

(*Please turn to page* 168)


First for **BOLTS NUTS STUDS**



★ Carbon Steel ★ Stainless Steel
★ Heat-treated Alloy Steels ★ Silicon Bronze
★ Naval Brass
★ Monel Metal

You can count on a uniform Class 3 Fit when you buy Pawtucket threaded fasteners. Accurately made in standard dimensions — or to your specifications.

**BETTER BOLTS SINCE 1882**

***Use Headed and Threaded Fasteners for Economy and Reliability***

**PAWTUCKET**

"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street · Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

# 8 outstanding N.B.M. BABBITTS

**Help Give You Better Bearing Performance . . . Longer Bearing Life**

Good babbitt is the result of using Virgin Metals, correctly proportioned and blended under close laboratory control. You find *all* these qualities in N-B-M Babbitts.

The 8 N-B-M Babbitt Metals shown are the result of years of research combined with actual engineering analysis of all types of bearing lining problems. Each of these N-B-M Babbitt Metals is "custom-alloyed" for specific types of service conditions. Thus, each has definite advantages over so-called "all-purpose" babbitts—advantages that result in longer, more economical bearing service.

These "Custom-Alloyed" bearing lining metals have effected important savings in plant maintenance—and big improvements in product performance. Every Product Designer or Plant Engineer should have engineering data on the complete line of these better N-B-M Babbitt Metals.



**Here is Complete Data on N-B-M Babbitt Metals . . .** This folder describes all 8 N-B-M Babbitt Metals, giving data on application, physical properties, preparation of bearing shells and pouring. Write for your free copy!




AMERICAN Brake Shoe COMPANY

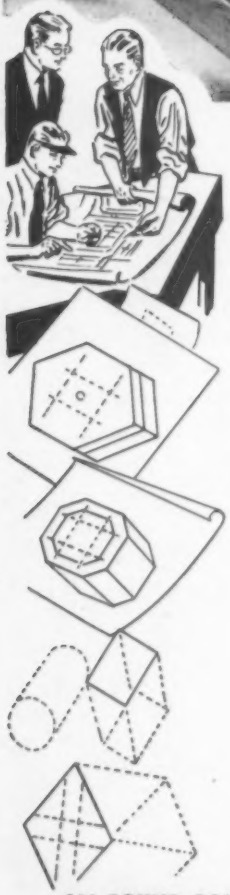
**NATIONAL BEARING DIVISION**

4930 Manchester Avenue • St. Louis 10, Mo.

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.



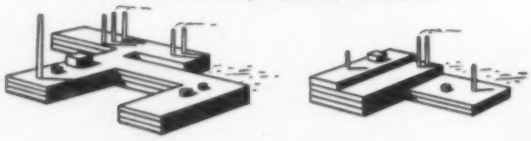

**WIREBOUND CRATE**
Strength-tested, lightweight. Built-in support features. Easy handling, stacks well. Supplied flat for wrap-around assembly.



## "American ENGINEERED" MEANS Safer BOXES and CRATES

**Precaution** against damage losses is basic economy. The "engineered" protection of American Boxes and Crates stands between your product and **all** the hazards of modern shipping—mechanized handling, stacking, exposure, etc. American offers you the accumulated skill and experience of 48 years of scientific, shipping box engineering—at a low price, made possible by latest production methods. One **free** sample packing of your product will show you the difference. Estimate included. Ask for full details.

**TWO GREAT PLANTS (Est. 1901)**
Located for easy access to all box-making needs. Main plant in Cleveland, Ohio, branch plant in Marion, S. C., feature most complete, modern facilities.

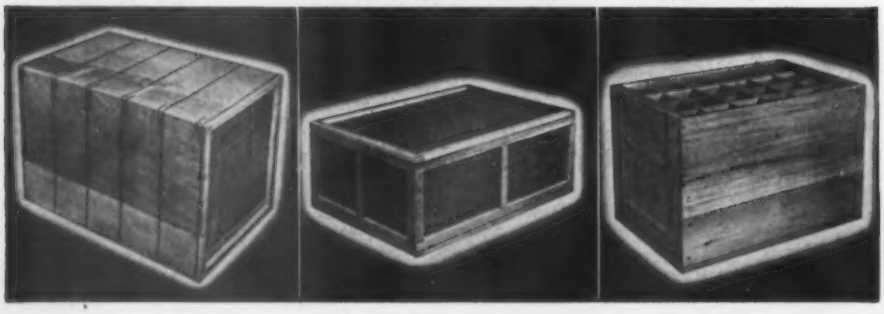


**THE American BOX CO.**
1901 W. 3rd Street • Phone: MAin 4221 • Cleveland 13, Ohio
Branch Plant: Marion, S. C.

**ALL-BOUND BOX**
Wood veneer panels, steel wirebound for strength. Completely enclosed. Protects contents from weather, dirt. Supplied flat for easy assembly.

**FIBREBOARD BOX**
Attractive, low-cost. Fully enclosed, panels steel stapled to wood cleats. Superior reinforcements. Supplied flat for easy assembly.

**NAILED WOOD BOX**
Materials and workmanship to meet or surpass Government Specifications for domestic or export shipments.



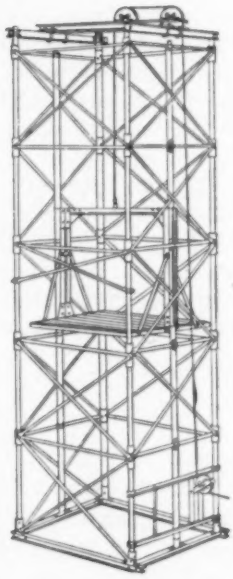

### MULTIPLE PURPOSE ADHESIVE

Flintkote No. 974 Rubber Cement is a new multiple purpose adhesive of the synthetic rubber-resin type said to be especially adapted for use with impervious surface materials and to applications requiring high bonding strengths. It is made by Flintkote Company's Industrial Products Division, 30 Rockefeller Plaza, New York 20, N. Y.

Flintkote says the adhesive is also suitable for various applications methods such as (1) cold bonding with cement applied to both surfaces and combined under pressure, (2) hot bonding in hot plate presses under approximately 200 lbs. per sq. in. at 250F for not more than 30 to 60 seconds, (3) reactivation of previously applied adhesive by use of a suitable solvent, followed by immediate combining. Bond is not affected by extreme or variable atmospheric temperatures and heat resistance is excellent, the company claims. Supplied in a viscosity of 1,200-1,600 cps at 77F, it is recommended for bonding all of the following, in any combination: wood, canvas, aluminum, glass, phenolics, rubber, steel, and saturated felt.

**Circle 128 on Reader Service Card, p. 19.**

### HOISTING TOWERS



Beaver Art Metal Corporation has started to fabricate two types of tubular steel hoisting towers, for heavy duty and light duty work. Dravo Corporation, Pittsburgh 22, Pa., is exclusive national distributor.

The heavy duty type, No. 5,000, has a live load capacity of 5,000 lbs. or a 35 cu. ft. concrete bucket. It can be erected to a maximum height of 1,200 ft. The light duty type, No. 3,200, has a live load capacity of 3,200 lbs. and can be erected to a maximum height of 200 ft. Both towers are available in the 3-wheelbarrow cage size, and in both single and double wells.

**Circle 129 on Reader Service Card, p. 19.**

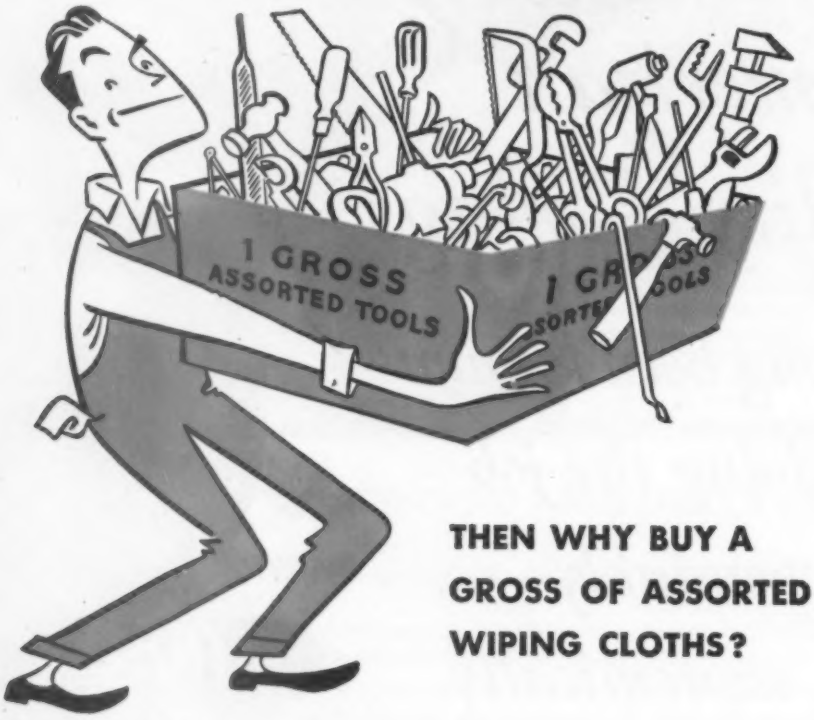
(*Please turn to page* 170)




USS **AMERICAN QUALITY SPRINGS**

UNITED STATES STEEL

# Would you buy a Gross of Assorted Tools?




**THEN WHY BUY A GROSS OF ASSORTED WIPING CLOTHS?**

**KEX Industrial Wiping TOWELS are important tools—designed, like any special tool, for a specific purpose.**

They aren't makeshift . . . they aren't discards that have outlived their original usefulness. They've been designed from their beginning to do your important wiping jobs, carefully, efficiently and economically.

KEX Industrial Wiping Towels are:

1. Actually precision items for wiping purposes *only*.
2. Soft, woven cotton with no abrasives to mar delicate surfaces.
3. Bound at the edges for safe use.
4. Made a convenient, uniform size for complete usability.
5. Scientifically cleaned by special high heat to remove all soil.
6. Rented—nothing to buy, no expensive inventory—just a low monthly rental charge.

Kex Towels are delivered in neat bundles, in desired quantities for easy storage, convenient handling and control of distribution. See your classified telephone directory for nearest KEX Distributor, identified by this trade-mark.

Or write for details, to KEX INDUSTRIAL SERVICE, 295 Fifth Avenue, New York 16, N. Y.

KEX

"KEX" NATIONAL SERVICE

REG. U.S. PAT. OFF.


## FLEXIBLE FLOOR MACHINE



If those small, congested floor areas around desks, counters, lockers, etc. are a maintenance problem, you might be interested in the new adjustable machine being introduced by the S. C. Lawlor Co., 126 N. Aberdeen St., Chicago, Ill.

The machine may be operated either with a stationary handle, locked in position, or with the handle in flexible position, allowing free movement anywhere within an 80° arc for reaching under all fixtures. The handle can be lowered until it reaches a horizontal position. The machine can be used for scrubbing, waxing, and polishing. It has a heavy duty ¼ hp motor for a-c or d-c, and a brush spread of 12½". Worm and gear brush drive are employed for rigidity of operation with maximum power and minimum noise. Rubber bumper prevents marring.

**Circle 130 on Reader Service Card, p. 19.**

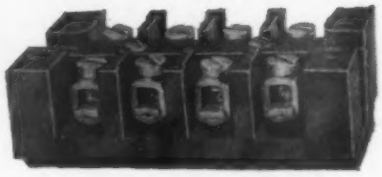
## NEW NICKEL ALLOY

A new nickel alloy which, unlike the majority of nickel alloys, contains no copper and is free of iron, is being marketed by the Waukesha Foundry Co., Waukesha, Wis.

Special properties claimed for the alloy, which has been designated "Waukesha Metal" Alloy No. 23, are high resistance to corrosion, good machinability, and freedom from any tendency to seize or gall when used in moving contact with itself or other metals including the stainless steels. The metal is available in cast form only. It does not require heat treatment, and in the as-cast condition has a tensile strength of 50,000 to 60,000 psi, an elongation of 7-10%, and a Brinell hardness of 145-165 (3,000 kg. load).

**Circle 131 on Reader Service Card, p. 19.**

## SOLDERLESS TERMINAL BLOCK



A solderless type molded terminal block that eliminates the need for wrapping wires around studs or applying terminals to wire ends, as with screw type

(*Please turn to page* 172)

# LIGHTING NEWS

**New lamps—new uses—money-saving ideas**

FROM GE LAMPS

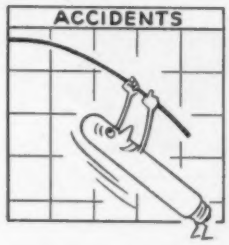



LIGHTING LOWERS COSTS AT TEXTILE MILL. Engineered lighting at Bachmann Uxbridge Worsted Corp. has consistently paid off in all production operations, according to J. M. Shute, Electrical Engineer. Careful tests show weaving efficiency up 10.5%, mending costs down 39.6% when lighting was raised from 14 to 70 footcandles with General Electric fluorescent lamps.



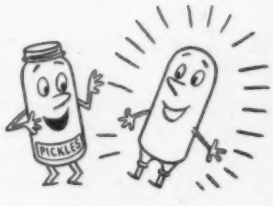
NEW SPOTLIGHT HAS EXTRA SLENDER BEAM. General Electric engineers have just announced a 50,000-candlepower spotlight that has only half the beam spread of spotlights now available — lets you concentrate light on a smaller spot. Designated the PAR-46, the 200-watt lamp is sealed-beam type - has its own built-in reflector. Applications include supplementary machine lighting from high mountings, spotlighting of store displays.

FIRST PLANT TO INSTALL G-E SLIMLINE FLUORESCENT LAMPS THROUGHOUT is the GREIST Manufacturing Company in New Haven — maker of sewing machine attachments and precision mechanisms. G-E slimlines were chosen for efficiency, high light output, and low-cost maintenance. Eight-foot-long slimlines provide 101 footcandles on work areas — provide lighting that boosts worker accuracy, plant officials report. Write for new free booklet, "Modernize with G-E Slimline." General Electric, Div. 166-P11, Nela Park, Cleveland 12, O.




ACCIDENTS WERE REDUCED 32% AFTER RELIGHTING, reports one of the country's largest manufacturers. A combination of General Electric mercury and filament lamps in a high-ceilinged shop upped lighting from 5 to 20 footcandles — reduced accidents a third. The manager of the plant's health and safety dept. cites better lighting as a big factor in reducing accidents.

BETTER HOME MOVIES POSSIBLE WITH NEW LAMP. General Electric has just developed a 375-watt photoflood lamp that puts more light on a small area than present 500-watt wide-beam photoflood lamps. Four new lamps can be used on most home circuits without blowing a fuse, rarely possible with four of the 500-watt lamps. Lamp fits household sockets, is designed for both color and black and white photography.




BARREL OF LIGHT IN A QUART JAR. G-E engineers have developed a bigger lamp for high intensity spotlights that gives steady light output on both AC and DC. About the size and shape of a quart jar, this 3,000-watt bulb is designed for long-range spotlighting in trade shows and other exhibitions.

For complete information on lamps and lighting, phone your local General Electric Lamp supplier.

*You can put your confidence in —*

GENERAL ELECTRIC

## Cost reduction on protective work gloves with 25% longer-wearing NEOX



Resilient neoprene combined with durable plastic, chemically welded to high tensile fabric lining. Gives snag-proof, liquid-proof, safer protection against acids, caustics, oils, greases, solvents, at **provably*** lower cost.

***Free test offer:** Send brief description of your operation, materials handled and temperature conditions. We will forward samples of the type glove we recommend, for on-the-job test and report. Edmont Mfg. Co., 540 Orange St., Coshocton, Ohio.

NEOX Coated: Many styles, three weights.



Edmont FABRIC-LINED NEOX-COATED GLOVES

Natural Rubber Coated: Rough surface, sure grip.

Palm-coated, fabric-back styles are also available.



Liquid-Proof plastic-coated.



## Something New In Packaging

**Ask for a copy of our new Folder**

identifying and illustrating Package types and sizes. It deserves your preferred attention and investigation . . . today as never before.

★ ★ ★

**Another Cleveland Container Product — —**

**No-Lap**
(Trade Mark Reg.)

**ABRASIVE SLEEVES, DRUMS and BELTS OF APPROVED CARBORUNDUM QUALITY . . . to meet today's finer finishing needs.**

Ask for a copy of our No-Lap catalog. It gives complete details on our many time, and money-saving products for all abrasive purposes. Samples also available on request.

Cleveland Container representatives have the background . . . the knowledge of today's needs to make it worth your while to ask questions.

May we serve you?

The CLEVELAND CONTAINER Co.
6201 BARBERTON AVE. CLEVELAND 2, OHIO

- All-Fibre Cans • Combination Metal and Paper Cans
- Spirally Wound Tubes and Cores for all Purposes
- Plastic and Combination Paper and Plastic Items

★ ★

PRODUCTION PLANTS also at Plymouth, Wisc., Ogdensburg, N. Y., Chicago, Ill., Detroit, Mich., Jamesburg, N. J.
PLASTICS DIVISION at Plymouth, Wisc. • ABRASIVE DIVISION at Cleveland, Ohio
SALES OFFICES: Room 5632, Grand Central Terminal Building, New York 17, N. Y., also 647 Main St., Hartford, Conn.
CANADIAN PLANT: The Cleveland Container Canada, Ltd., Prescott, Ontario. Sales Offices in Toronto and Montreal



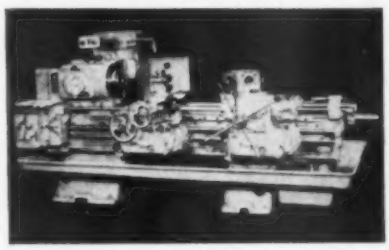

(*Continued from page* 170)

blocks, is a new product of Buchanan Electrical Products Corp., 1290 Central Ave., Hillside, N. J.

The terminal blocks are provided with compression type solderless units, each capable of receving wires from No. 16 to 6 AWG. Typical combinations accommodated by a single terminal are two No. 10, two No. 12 or two No. 14; one No. 12 with one No. 10, one No. 12 with one No. 14, etc. Attachment of wires to block is accomplished by tightening screws after insertion of stripped wires. The terminal block allows more rapid production wiring and lends itself to easier and quicker maintenance, according to Buchanan. The blocks are rated at 35 amperes—600 volts, and come in 4, 8, and 12 circuit sizes. Screw-on covers are available.

**Circle 132 on Reader Service Card, p. 19.**

### TURRET LATHE



Newest turret lathe of the Jones & Lamson Machine Co., Springfield, Vt., is the Model 7A saddle type with 2½" bar and 12" chuck capacity, which the company says is a rugged, remarkably versatile, easy-to-use machine.

The functional design is said to give special consideration to accelerated developments in high surface speed metal removal. The design of the bed emphasizes strength and rigidity, and provides for increased facility in chip disposal. Threading to maximum turning length with carriage or saddle is made possible by a full length lead screw. An all-sliding-gear quick-change gear box with a single lever pitch selector provides a wide range of pitches. Both cross slide and saddle are equipped with power rapid traverse, and the turret is power indexed. Two ranges of 12 spindle speeds, 20 to 1000 rpm or 30 to 1500 rpm are available, with a constant speed motor.

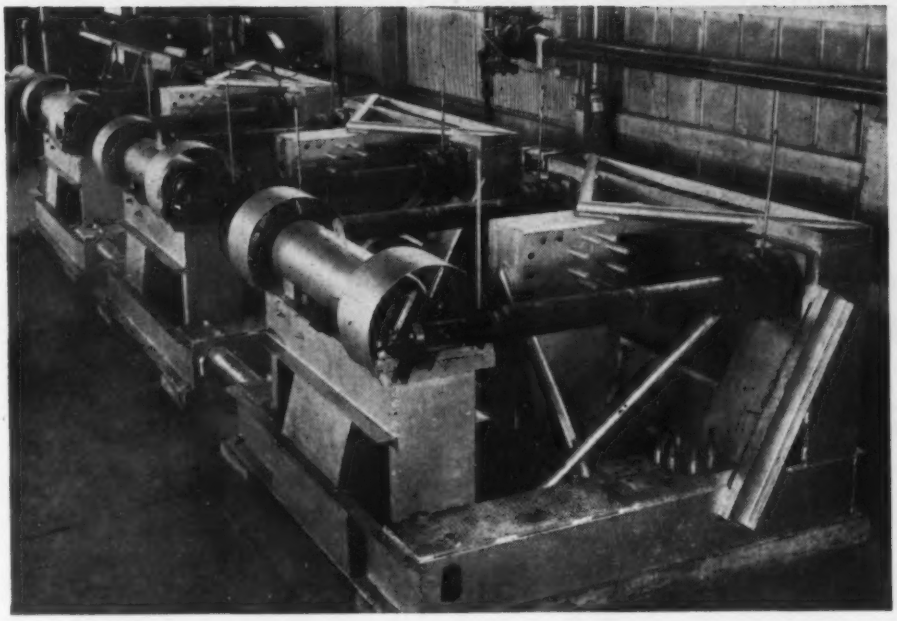
**Circle 133 on Reader Service Card, p. 19.**

### PORTABLE BELT SANDER

Another Thor Silver Line portable tool — an electric belt sander — has been put on the market by Independent Pneumatic Tool Co., 175 North State St., Aurora, Ill. The tool will sand wood, metal and stone with endless sanding belts 4½" wide by 26" long.

The sander features a direct spur gear drive, rapid belt changing device, and a new heat radiating system the company says will increase belt life. A simplified

(*Please turn to page* 174)



Strength through Design in Tube-Turn welding flanges

# Taking the measure of piping fatigue

PIPE lines are *live, dynamic* members of a piping system. They *breathe* with changes in temperature and pressure. And the danger of fatigue failure from pressure shock, thermal shock, and cyclic conditions is ever-present.

More precise information was needed on this subject. So, Tube Turns research engineers set out to get the answers. For the purpose, they designed and built a unique cyclic testing machine to handle full-size piping assemblies under a wide range of temperature, pressure, and corrosive conditions. And on this torture rack they subjected flanged assemblies to reverse bending tests carried on to ultimate failure. Information revealed forms the basis of new designs for greater strength in Tube-Turn welding flanges.

Other piping assemblies, too—welding elbows, mitre bends, manufactured and fabricated tees, pipe bends—have been subjected to punishment more severe than any they would probably face in normal service.

And this perpetual search for greater strength through better design has paid off in the form of realistic, non-theoretical facts providing a sound basis for Tube Turns' manufacturing policies—facts important to anyone interested in getting his money's worth in long life from piping installations.

Tube Turns' research and development organization, finest in the welding fittings industry, is constantly striving for the improvement of present products, the development of new ones. Notable among their recent achievements have been the design of a new type welding tee and the development of aluminum welding flanges.

Ask to be put on the mailing list for Tube Turns' technical periodical, *Piping Engineering*. Paper 6.01, for instance, deals extensively with standard steel flanges. Others give you research findings and additional working information pertaining to piping not generally available in convenient form.

TUBE-TURN

tt

WELDING FITTINGS AND FLANGES

## TUBE TURNS, INC.

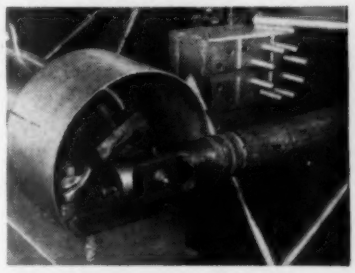
**246 East Broadway, Dept. K, Louisville 1, Kentucky**

District Offices at New York, Philadelphia, Pittsburgh, Chicago, Houston, Tulsa, San Francisco, Los Angeles

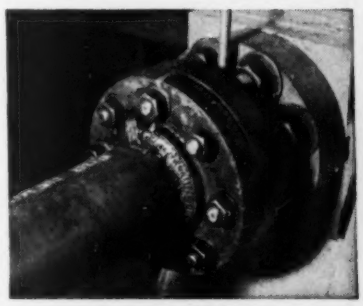
## TYPICAL FLANGE ASSEMBLY TESTS



Assemblies were of 4-inch nominal size with 300 pound forged steel flanges and standard weight pipe.



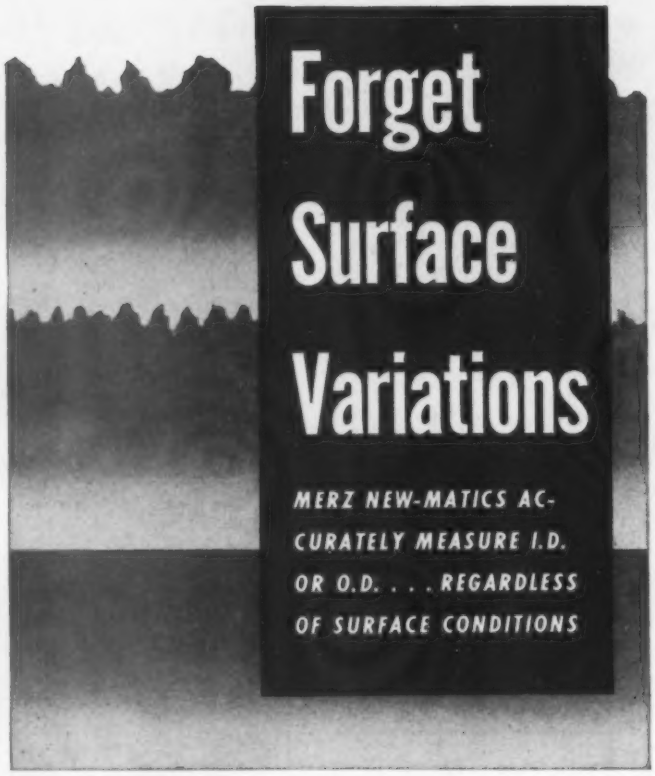
Eccentric crank arm produces up-and-down movement which creates a cyclic bending moment on flange or fitting at opposite end of assembly.



Water spurts from crack in test specimen. Almost invariably, failure occurred in the pipe adjacent to the flange.



Aluminum welding flanges . . . another Tube Turns first! Available in a wide range of types and sizes.




● Only MERZ *New-Matic* Measuring Machines enable you to obtain identical I.D. or O.D. readings—*every time*—on parts of like diameter . . . *regardless of surface variations.* In MERZ *New-Matics,* a synthetic ruby button contacts only the highest surface points. Unlike conventional gages—where compressed air directly touches *all* surfaces, high and low alike—MERZ *New-Matics* are unaffected by any surface variations.

For the same reason, MERZ *New-Matics* are the only air-actuated units capable of accurately gaging parts in which perforations or keyways have been machined. MERZ *New-Matic* Measuring Machines also permit accurate gaging to the extreme edges.

For full details on these and many other advantages of MERZ inspection equipment, write for free 20-page book which illustrates and explains the *New-Matic* principle of measuring and sorting.

**MERZ ENGINEERING COMPANY • INDIANAPOLIS 7, IND.**

MERZ



MERZ "Master" *New-Matic* Measuring Machine. Other models for every inspection purpose.


(*Continued from page* 172)

"tracking" arrangement permits easy centering of the belt on the roller pulleys and a special internal device prevents belts from wearing away the inner surfaces of the housings. The sander comes in two models, with or without dust collecting system. A complete line of sanding belts in various grades and grits plus a cloth polishing belt is available.

**Circle 134 on Reader Service Card, p. 19.**

## MOVABLE STEEL SHELVING



No nuts, no bolts, no tools are needed to assemble its new style, super-strength line of Iron-Grip steel shelving, according to Equipto, Division of Aurora Equipment Co., Aurora, Ill.

The secret to the speedy assembly, claims Equipto, is its exclusive Iron-Grip stud, which is said to save 60% of assembly time. The stud slips into a hole in the shelf and into a keyhole in the upright. The shelf is pressed down and the assembly is complete. The greater the load, the tighter the grip. Shelves are instantly movable on 1½" centers, dividers on 1" centers. All parts are adjustable from the front of the unit. The construction is available in open and closed shelving, parts bins, and counters.

**Circle 135 on Reader Service Card, p. 19.**

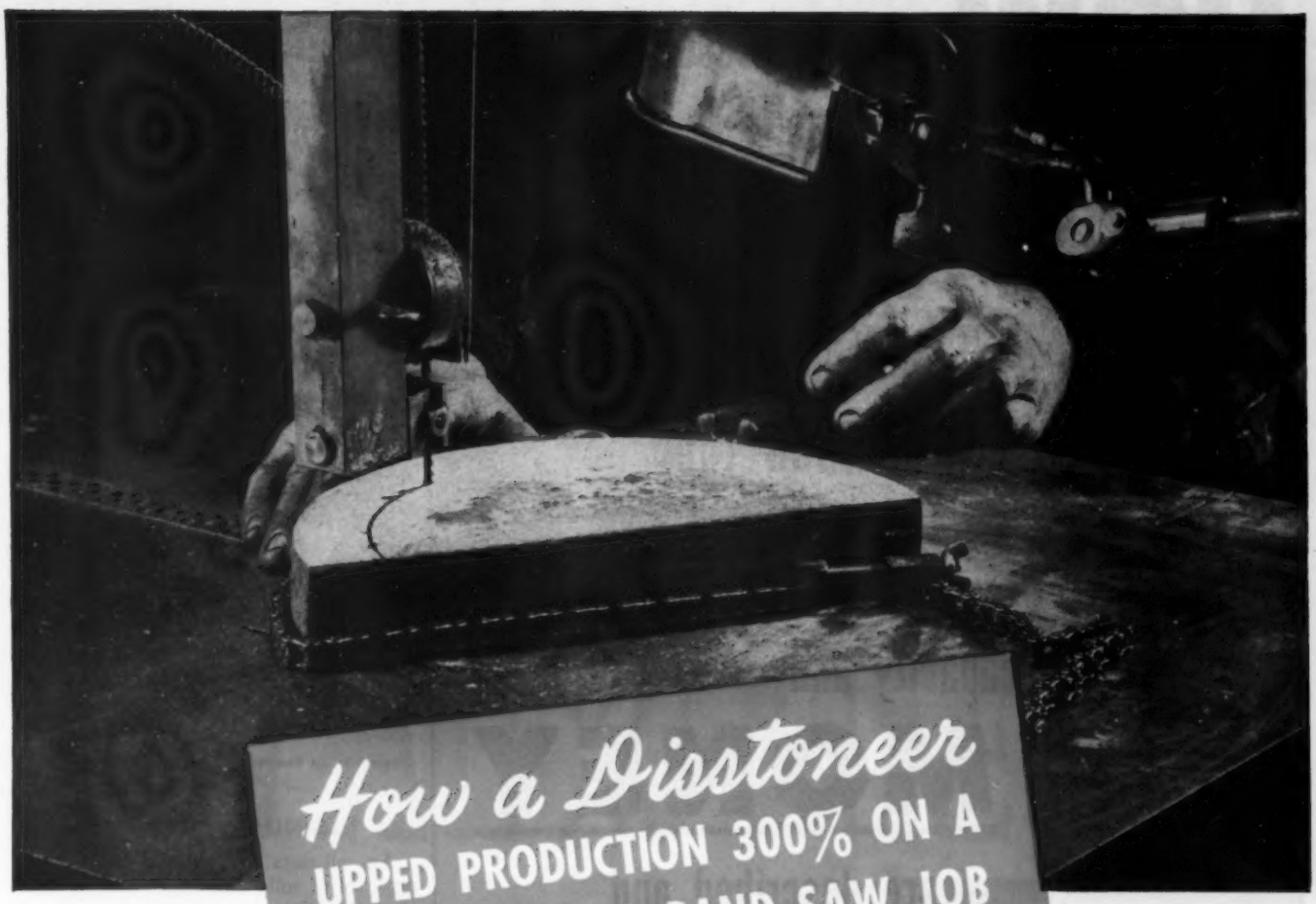
## HEAT-COLD RESISTANT GLOVES

The Pioneer Rubber Co., Willard, O., has developed a liquid-tight industrial glove with resistance to extremely hot and cold temperatures.

Called "Hot 'N Cold", the glove is made of red Neoprene, and has curved fingers and wrist-length gauntlets. The insulating lining is made up of several layers of wool fleece. Tests of the gloves proved them usable in temperatures as high as 314F, and as low as 85° below zero, according to Pioneer. Tests were also made at temperatures of 212F, 12F, and 2F. At 12F no discomfort was found by the testers after 30 minutes of constant immersion, it is reported. High temperature tests were made with heated glycerine, low temperature tests with ice in calcium chloride brine and dry ice in acetone. Style number of the glove is R-28.

**Circle 136 on Reader Service Card, p. 19.**

(*Please turn to page* 176)



# How a Disstoneer UPPED PRODUCTION 300% ON A METAL-CUTTING BAND SAW JOB

Cutting semi-circular units of 1½" boiler plate steel with Disston Hard Edge Flexible Back Band Saw Blade.

The material being cut was 1½" mild boiler plate (5.2 Brinell). Using a ½", 10-tooth blade, it took 1½ hours to saw out a complete unit and only one unit could be cut per blade. Since other operations were performed faster, a bottleneck resulted and highly paid workers were kept idle while waiting for the units to come through.

The Disstoneer* recognized a condition often met before . . . one that is frequently overlooked. The blade in size and number of teeth to the inch was not suited to the work. He recommended a Disston Hard Edge Flexible Back Band Saw Blade of a narrower width and a coarser tooth spacing. It was as simple as that . . . simple to the Disstoneer because he could draw from a long experience with metal-cutting operations of every kind. And the results . . .

Four complete units are now being cut with one blade—2 per hour, three times the production of the discarded blade. Wider tooth spacing provided more gullet room for chip clearance, permitting faster speeds and feeds. The bottleneck was eliminated. The narrower blade made cutting of the radius easier. Production costs and blade costs were reduced.

The Disstoneer may be able to do as much for you. His services are available without cost or obligation.

*For further particulars, write direct or get in touch with your local Disston Industrial Distributor.*

***DISSTONEER**—a man who combines the experience of Disston leadership and sound engineering knowledge, to find the *right tool* for you—to cut wood, to cut metal and other materials—and TO CUT YOUR COST OF PRODUCTION—*not only on special work, but on ordinary jobs as well.*

If you have a filing problem, you'll be interested in Disston Bite-Rite Files.

## DISSTON BITE-RITE FILES ARE DIFFERENT

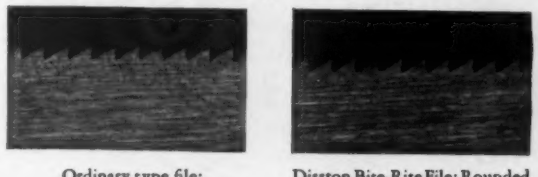
Disston Bite-Rite Files differ from ordinary files in design, construction and service qualities. One important difference is the tooth pattern. Instead of being in straight rows, the teeth are staggered, resulting in faster cutting and smoother work. Teeth are sharp, uniform and extra tough. They stand up long in hard service. Rounded gullets reduce clogging. All lengths, shapes and cuts . . . for all metals . . . for hand or machine use



Enlarged photographs looking into cutting face of teeth.

Ordinary type file with teeth in straight rows.

Disston Bite-Rite File with staggered teeth.



Ordinary type file: Clogging gullets.

Disston Bite-Rite File: Rounded, non-clogging gullets.

**HENRY DISSTON & SONS, INC., 1133 Tacony, Philadelphia 35, Pa., U.S.A.**

**HOW** Big Businesses are using CLARK Methods and Machines as the quick, sure means **TO** lower that all-important break-even point, and the amazing extent to which they **SAVE** production time, human effort, storage capacity and **MONEY**




— are described and pictured in the MATERIAL HANDLING NEWS

*

This stimulating "tell how" magazine, and Clark's invaluable "show how" motion pictures, rich with proved money-saving ideas that *you, too, can use,* will be sent to you at no cost. No obligation! Simply request them on your business letterhead.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS



INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 23, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

THE NATIONAL GUARD DEFENDS AMERICA — JOIN NOW


## HAND-OPERATED LABEL GUMMER



King Sales & Engineering Co., 210 First St., San Francisco, Calif., has come out with a low-priced hand operated label gummer suited for any industry where relatively small size labels are used.

The new machine, which King calls Model F6-H, will apply adhesive to labels of any length or shape up to 5¾" wide. The company claims an unskilled worker can operate it without any special training. The machine is convenient for carrying around by hand to various departments, since it weighs only 10 lbs. and measures 10" x 10" x 5½". The glue pot lifts off and is cleaned by rinsing in water.

**Circle 137 on Reader Service Card, p. 19.**

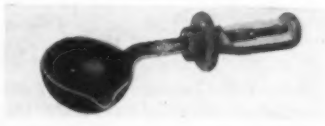
## FLEXIBLE METAL GASKET

An all-metal gasket possessing the qualities of solid metal without the rigid characteristics of ordinary solid metal gaskets is a new product of Flexitallic Gasket Co., 8th & Bailey Sts., Camden 2, N. J.

Flexitallic says that in a number of tough applications it has been found that the new gasket does not take the permanent "set" customarily expected with solid metal gaskets. The gasket is said to be suited to applications where high temperature and the permeability of confined materials limit the use of asbestos or other soft fillers. With metal there is no possibility of contaminating the confined liquids. The basic spiral-wound feature developed by the company is used in the gasket. Several types of ferrous and nonferrous metals are used in combination.

**Circle 138 on Reader Service Card, p. 19.**

## COOL HANDLED MELTING LADLE



Unique Manufacturing Co., Inc., 226 West Walton St., Chicago 10, Ill., has developed a melting ladle with a short, air-cooled wooden handle which it claims will not char or pull off. The "close to the bowl" grip is said to eliminate arm strain and permit accurate, comfortable control of the molten metal.

The cut-away illustration shows the air space around the shank inside, which keeps the handle cool at all times. The

(*Please turn to page* 178)




TUNE IN "SUSPENSE!" . . . CBS RADIO NETWORK THURSDAYS . . . CBS TELEVISION TUESDAYS



*"What's so good about H-VW-M cobalt nickel plating processes?"*

**Richard E. Waite, Field Representative**
**H-VW-M Rochester Office**

When a customer asks that question, he's *really* talking my language. There's no H-VW-M process I'd rather discuss than Cobalt-Nickel, especially the 9-H bath.

"Take plating costs, for instance. 9-H Cobalt-Nickel saves you money because no expensive brighteners, wetting agents, or anti-pitting agents are required. Besides, costly purification shutdowns can be eliminated because the Cobalt-Nickel processes are the only commercial plating baths which can be continuously purified without removing or destroying the active brightening agents.

"And look at your operating range. The composition, pH and operating conditions can be altered to give moderately hard or relatively soft deposits; full brightness or easily-buffed semi-bright deposits. The current density range is limited only by your equipment. And also important . . . Cobalt-Nickel baths can be 100% analyzed and scientifically controlled.

"You say, 'How about results?' Well, for one thing 9-H never produces striafied deposits as other nickels do. Instead, the result is always a fine-grained structure containing no organic inclusion . . . better corrosion resistance . . . better even than ordinary buffed nickel. And for even greater fineness of color, additional corrosion resistance and a harder finish, use H-VW-M No. 5 or H-VW-M Type AA Processes.

"And remember . . . H-VW-M works with you all the way . . . shows you how to set up for real low-cost operation with 9-H or any of the other H-VW-M Cobalt-Nickel Plating Processes."

Ask your H-VW-M representative, or write to "Headquarters," for Bulletin G-102, or Cobalt-Nickel Plating Processes.

"Hanson-Van Winkle-Munning has supplied the plating industry for over 70 years. Our sales-engineers are thoroughly familiar with *every* step in the process of electroplating and polishing. It is this *overall* knowledge that has made H-VW-M "Headquarters" for electroplating and polishing equipment, supplies and technical assistance.

SINCE 1920

**HANSON-VAN WINKLE-MUNNING COMPANY**
**MATAWAN, NEW JERSEY**
*Manufacturers of*
*a complete line of electroplating and polishing equipment and supplies*
*Plants:* Matawan, New Jersey • Anderson, Indiana
*Sales Offices:* Anderson • Chicago • Cleveland • Dayton • Detroit
Grand Rapids • Matawan • Milwaukee • New Haven • New York • Philadelphia
Pittsburgh • Rochester • Springfield (Mass.) • Stratford (Conn.) • Utica

5862

FORMICA at Work in Industry




Data on Formica

**Can you identify these parts?** The book "Data on Formica" gives full information on how Formica Parts contribute to the smooth operation of thousands of consumer and industrial products. Examples: 1 Ball Bearing Separators. 2 Motor Control Switch Insulation. 3 Factory truck wheels. 4 Electrical Contact Spacers used in Calculating Machines. 5 Distributor Timing Plates for Aircraft Magnets. Let us know how you are considering using Formica. It can be custom made to meet your requirements. "Data on Formica" and typical samples are available. Help us help you. Write FORMICA, 4517 Spring Grove Avenue, Cincinnati 32, Ohio.

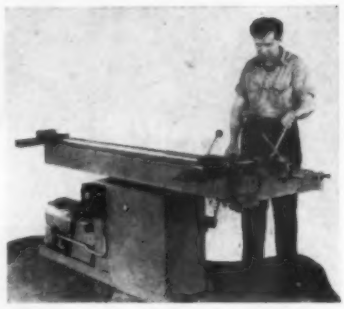
Productive FORMICA at Work in Industry


(*Continued from page* 176)

handle is replaceable. The lips of the bowl are slightly lower than the rest of the edge, and the point of the lip does not form the usual angle, but is circular and points downward. This feature enables the user to pour solder drop by drop or in a steady stream without spilling over the edge of the bowl, Unique says.

**Circle 139 on Reader Service Card, p. 19.**

## TUBE BENDING MACHINE



Pines Engineering Co., Aurora, Ill., is now making a semi-automatic hydraulic bending machine for speedy handling of production jobs, or short run and maintenance bending work requiring frequent changeovers of set-ups.

A self-contained unit designated as series 1400 bender, it is designed to handle tubes and pipes up to 5′ long, but can be easily extended to take any length. The maximum rated capacity of the bender is for 1″ O.D. 16-gage steel tubing, with a maximum bending radius of 8½″ to center of tube. Pines says it can be easily tooled to handle serpentine and stacked coil bends, and is adaptable to tubing, pipes, and bars as well as rolled or extruded sections. Smooth accurate bends are made in a few seconds by a 2″ movement of the hydraulic valve lever. The machine can be bolted to the floor or mounted on a standard shop skid or dolly for portable operations.

**Circle 140 on Reader Service Card, p. 19.**

## NON-SLIP LIQUID FLOOR WAX

The Penetone Company, Tenafly, N. J., claims it has a new non-slip liquid floor wax that will make most flooring materials safer than when they are unwaxed.

A new chemical derivative gives the wax its slip-proof quality, according to Penetone, producing a film which combines the lustre of glass with the friction-grip of emery. All the desirable features of a quality wax are said to be retained in the product, including attractive sheen, long life, ease of application, and quick drying. Mechanical buffing is not required, although it can be used without affecting the slip-resistance. The wax is said to be suitable for use on all floor surfaces, is non-inflammable, and contains no solvents.

**Circle 141 on Reader Service Card, p. 19.**

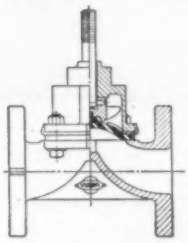
(*Please turn to page* 180)

# NEW! Grinnell-Saunders Diaphragm Valves *power operated* by Bendix-Westinghouse Rotochambers

*dependable power operation and remote control*

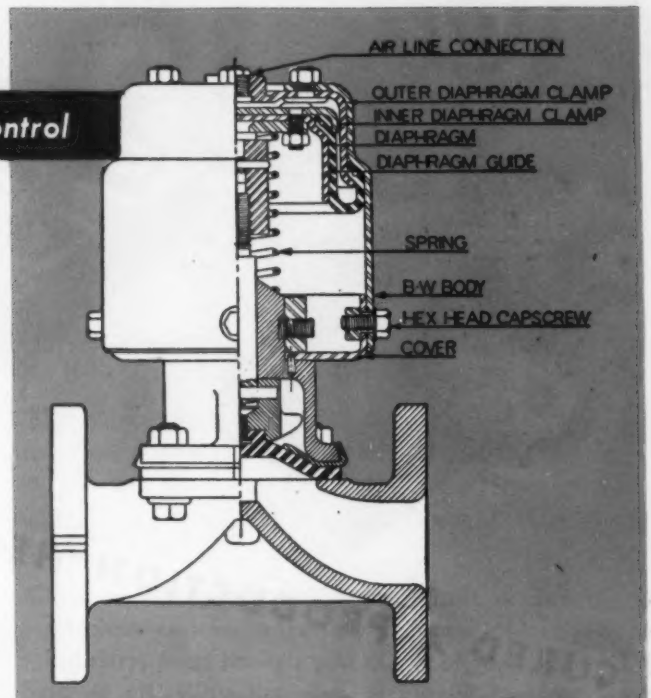
## FEATURES:

- Bendix-Westinghouse Rotochamber top-works has rolling sleeve type of seal . . . leakproof and practically frictionless. No packing glands and no lubrication required.
- Pressed steel cylinder is neat looking, light and compact. Height of 2″ flanged air-to-close valve from center line to top is only 9¾″; air-to-open valve (in open position) is 14⅛″.
- Bendix-Westinghouse top-works has been tested up to seven million strokes without any sign of wear or failure.
- Top-works may be operated with air or hydraulic pressures up to 105 pounds. For pressures up to 100 pounds in the line being controlled, an actuating pressure of only 50 pounds is required under average conditions. Pressure reducing valves are not required for pressures up to 105 pounds because of adjustable stem travel stops incorporated in the valve bonnet design.
- Adjustment is easily made without removal of top-works from valve body.

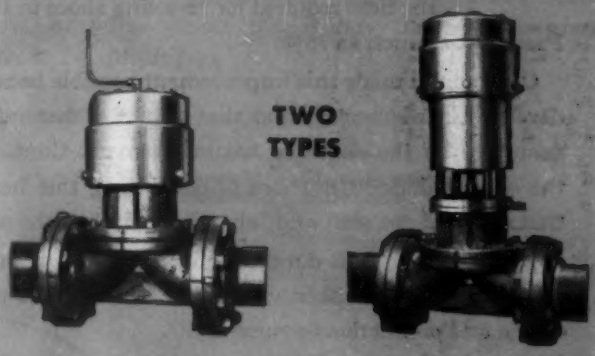


Sliding stem bonnet assembly is suitable for use with other valve motor units. Sliding stem bonnets are interchangeable with other bonnet designs.

**YOU GET THESE ADVANTAGES IN ANY GRINNELL-SAUNDERS DIAPHRAGM VALVE:** Diaphragm isolates working parts from the fluid, preventing corrosion of these parts and contamination of the fluid; diaphragm opens wide for streamlined flow; diaphragm presses tight for positive closure, even with suspended solids in the line; body, lining and diaphragm materials to meet service conditions; simple maintenance.




air to close, spring to open




4″ air to close, spring to open

4″ air to open, spring to close

**GET THE WHOLE STORY** on this and other Grinnell-Saunders Diaphragm Valves. Send coupon below for new Catalog 4-S, just out.

Grinnell Company, Inc.
258 West Exchange St.
Providence 1, R. I.

Please send me a copy of your new Catalog 4-S of Grinnell-Saunders Diaphragm Valves.

*Name*_____

*Company*_____

*Address*_____

99 YEARS PIPING

**GRINNELL**



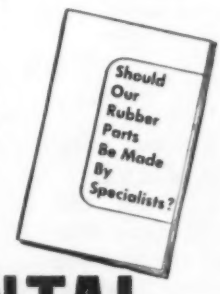

CURED A PRODUCTION HEADACHE

This electrically heated rubber pad has reduced the time required for re-soling shoes in the famous Lamac Press by as much as 75%.

Continental made this improvement possible because it was able to develop a rubber compound that would withstand the intense heat generated by the electrical heating element. Continental also solved the equally difficult problem of positioning this heating element so that it would not shift and "short" itself when the pad was molded.

The success of this development is another example of the specialized assistance in rubber which Continental offers to design and production engineers.

***If You Have Rubber Problems, Send for This Helpful Booklet.***
Three minutes' reading time will give you a new conception of the assistance you can gain by consulting specialists in rubber. Just ask your secretary to write for a copy today.

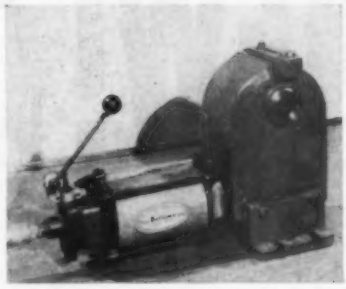



*Rubber by* **CONTINENTAL**
**RUBBER WORKS**
1983 LIBERTY BOULEVARD • ERIE, PENNSYLVANIA

BRANCHES

| | | | |
|---|---|---|---|
| Baltimore, Md. | Dayton, Ohio | Los Angeles, Calif. | Pittsburgh, Pa. |
| Boston, Mass. | Detroit, Mich. | Lutz, Fla. | Richmond, Va. |
| Buffalo, N. Y. | Hartford, Conn. | Memphis, Tenn. | Rochester, N. Y. |
| Chicago, Ill. | Indianapolis, Ind. | Milwaukee, Wis. | St. Louis, Mo. |
| Cincinnati, Ohio | Kansas City, Mo. | New York, N. Y. | San Francisco, Calif. |
| Cleveland, Ohio | Lancaster, S. C. | Philadelphia, Pa. | Syracuse, N. Y. |


## AIR-POWERED COLLET CHUCK

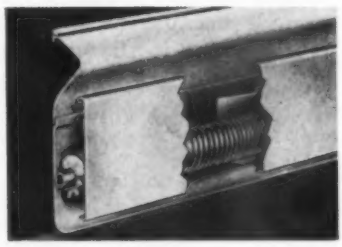


A heavy duty "controlled air power" collet chuck known as the BZC-10 has been introduced by the Bellows Company, Akron O.

The BZC-10 is powered by a BM-10 air motor which develops a thrust 10 times the operating air line pressure. The holding power of the collet chuck is sufficient to withstand severe types of drilling, tapping and milling without the part or work piece slipping or twisting in the collet, according to Bellows. At 60 lbs., air line pressure gripping power equals approximately 185 foot pounds torque. The BZC-10 is an almost universal collet chuck, handling most standard collets with stock clearance up to 1⅜". The unit is so designed that in event of air pressore failure it will still hold securely, and air pressure must be applied before work can be released.

**Circle 142 on Reader Service Card, p. 19.**

## BASEBOARD HEATING UNIT



National Art Basboard is a new heating unit which is installed semi-recessed along the outer walls of residence, store or office and extends only 1½" into the room from a plaster, wood, brick, or building board wall.

The unit, which is installed at the junction of floor and wall as the heat distribution component of a forced hot water heating system, has a heating element made of ⅜" commercial copper tubing on which is bonded a series of helical copper fins. The steel enclosure is provided in the form of a back panel assembly and a front panel assembly. The hot water ratings for the new product range from 370 Btu per hour, per lineal foot at a water temperature averaging 170F, up to 730 Btu per hour, per lineal foot with a water temperature averaging 230F. The manufacturer is National Radiator Co., Johnstown, Pa.

**Circle 143 on Reader Service Card, p. 19.**

(*Please turn to page* 184)

# Bundyweld*... your best call for tubing



**Like** to get a line on better design, faster production, lower costs or higher quality in your tubular applications?

Put in a call for Bundyweld* Tubing!

Double-walled from a single strip, bonded throughout, Bundyweld is lightweight, ductile . . . leakproof, too . . . and can be bent without fear of collapsing or weakening structurally. Held to close tolerances, it can be easily machined or fabricated . . . cuts production time, lowers production expense.

Manufacturers in many fields . . . automobile, machine tool, range, television, radiant heating, refrigeration, tubular toys—to mention only a few . . . are ringing in on the advantages of low-cost Bundyweld Tubing.

Chances are, your design, structural or functional problem can be solved by this miracle tubing of industry, even though you may not seem to need a tubing at all. Why not give it a try? Contact your near-by Bundy representative among those listed below, or write direct to: *Bundy Tubing Company, Detroit 14, Michigan.*

**BUNDY TUBING**

ENGINEERED TO YOUR EXPECTATIONS

* REG. U. S. PAT. OFF.

**WHY BUNDYWELD IS BETTER TUBING**

1 Bundyweld Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with a bonding metal.

2 This strip is continuously rolled twice laterally into tubular form. Walls of uniform thickness and concentricity are assured by close-tolerance, cold-rolled strip.

3 Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong ductile tube, free from scale, held to close dimensions.

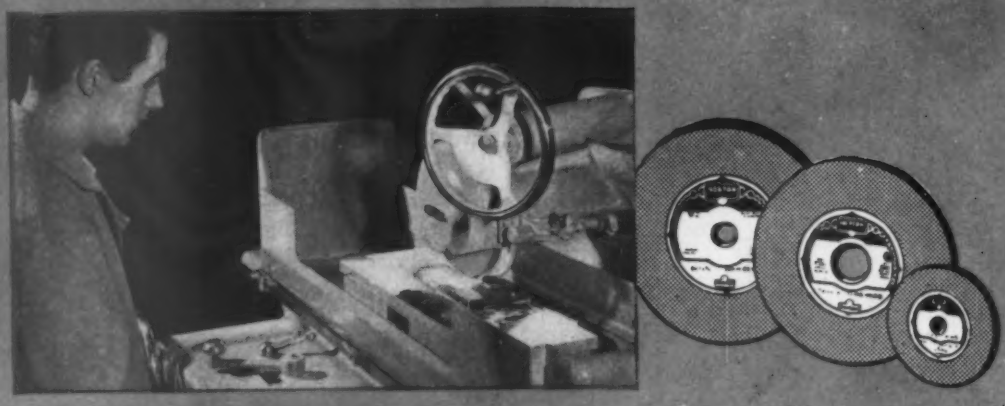
4 Bundyweld comes in standard sizes, up to ⅝" O.D., in steel (copper or tin coated), Monel or nickel. For tubing of other sizes or metals, call or write Bundy.

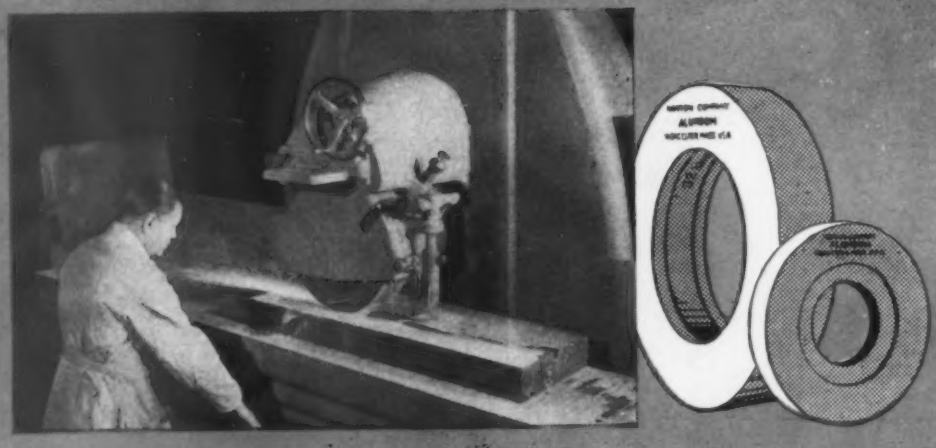
**BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES**

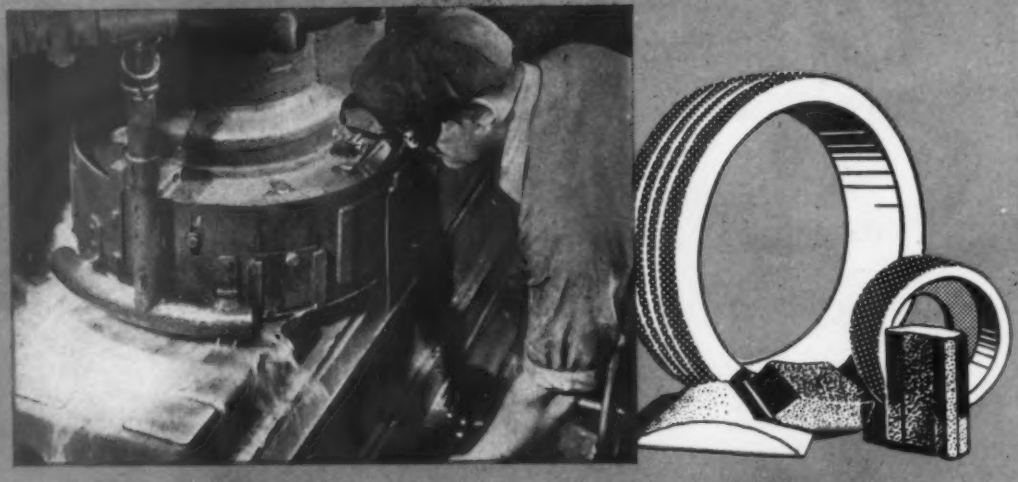
***Cambridge 42, Mass.:*** Austin-Hastings Co., Inc., 226 Binney St. • ***Chattanooga 2, Tenn.:*** Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg. ***Chicago 32, Ill.:*** Lapham-Hickey Co., 3333 W. 47th Place • ***Elizabeth, New Jersey:*** A. B. Murray Co., Inc., Post Office Box 476 • ***Philadelphia 3, Penn.:*** Rutan & Co., 404 Architects Bldg. • ***San Francisco 10, Calif.:*** Pacific Metals Co., Ltd., 3100 19th St. • ***Seattle 4, Wash.:*** Eagle Metals Co., 3628 E. Marginal Way • ***Toronto 5, Ontario, Canada:*** Alloy Metal Sales, Ltd., 881 Bay St.

**BUNDYWELD NICKEL AND MONEL TUBING IS SOLD BY DISTRIBUTORS OF NICKEL AND NICKEL ALLOYS IN PRINCIPAL CITIES.**

# Looking for Lower







Abrasives · Grinding Wheels · Grinding and Lapping Machines · Refractories · Porous Mediums · Non-slip Floors · NoRide Products · Labeling Machines

# Surface Grinding Costs?

## *Here's Real Help—*

### NORTON PRODUCT VARIETY TO MEET *EVERY* JOB REQUIREMENT

Straight wheels for the light tool room grinder or the big production job, cylinder and cup wheels in all sizes and including the plate mounted type, segments in sizes and shapes for all makes of chucks . . . a wide variety of abrasives including ALUNDUM, 38 ALUNDUM, 57 ALUNDUM, the unique 32 ALUNDUM and CRYSTOLON abrasives . . . several bonds including vitrified, BE vitrified, silicate and resinoid.

### NORTON ENGINEERING "KNOW-HOW" TO SOLVE *EVERY* SURFACING PROBLEM

It's not enough to have the right wheel or segment for each surfacing job. Lowest cost can only come when they are properly selected for the job. And that's where Norton "know-how" is important. In every industrial center there are Norton abrasive engineers—each an expert in selecting the right product for your surfacing jobs. At Worcester there are engineering and laboratory specialists. Throughout the country there are over two thousand Norton distributor men—a large percentage of them factory-trained at Worcester.

Take advantage of the completeness of the Norton line and Norton engineering "know-how" to get all your surface grinding costs down to meet today's keen competition.

**Outstanding for Surface Grinding . . . 32 ALUNDUM ABRASIVE**

It's in the field of surface grinding that the sensational new 32 ALUNDUM abrasive has its widest application. The grinding wheel supervisor of one of the country's largest plants says, "The best wheel there is for all kinds of surface grinding—we don't consider anything else."

Have you tried 32 ALUNDUM to cut surface grinding costs?

NORTON ABRASIVES

W-1259

NORTON COMPANY, WORCESTER, MASS. New York, Chicago, Detroit, Cleveland, Philadelphia, Pittsburgh, Hartford

# your VICTOR distributor



## a good man behind a good blade

Yes, Sir, when it comes to knowing what blade to use on metal or non-metal cutting problems . . . your VICTOR Distributor's long experience more than qualifies him to help you out. An expert on hack saw blades, he'll be glad to show you how to cut metals and non-metals easier and faster, and cut costs too, with VICTOR Blades.



**VICTOR'S Steelrite Metal Marking Crayons**

Ask your VICTOR distributor about these new and improved metal marking crayons. Available in a variety of sizes, these crayons, made of genuine soapstone by special extrusion process, are uniform in strength and composition. Markings can be made on hot, cold, damp or grimy metal and withstand pickling, yet do not affect enamel application.

*Don't forget to ask him for a free copy of the Victor Metal Cutting Book for your pocket or tool kit and the Victor Wall Chart for your shop . . . They'll help you get maximum efficiency from your metal cutting saw blades. Always keep your Victor line complete!*

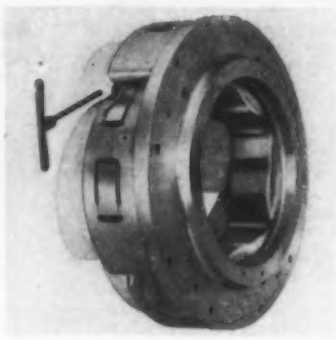



VICTOR

SAW WORKS, INC., Middletown, N. Y., U. S. A.

Makers of Hand and Power Hack Saw Blades Frames and Band Saw Blades


## SEGMENTAL GRINDING CHUCK



Abrasive Machine Tool Co., East Providence 14, R. I., has developed a new type segmental grinding chuck it claims is giving up to 35% faster cutting action and greatly improved finishes.

In basic design the chuck is standardized so that two sizes of abrasive segments cover all grinding wheel requirements for vertical and horizontal spindle face grinders. The sharp pointed segments are placed in circular echelon overlap formation and cut with a rapid sweeping action which throws out chips and dirt as the chuck revolves. According to Abrasive, tests have shown that segment waste is reduced 20% by the design of the segment holders.

**Circle 144 on Reader Service Card, p. 19.**

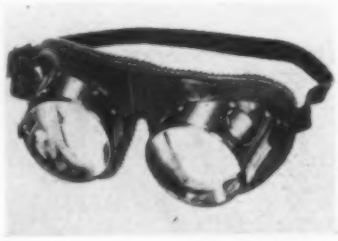
## LEVEL WITH OWN LIGHT

A shop foreman who got tired of juggling a light and a level designed the Luma-Level, with a self-contained light for use on dark interior jobs. It is now being produced by the International Mfg. Co., 2360 S. Delaware, Denver, Colo.

The level is machined from cast aluminum, and measures 9" x 1 13/16" x ¾". The case contains the horizontal, vertical and 45° angles, and the light. The light is furnished by a small flashlight bulb and pencil-light battery. International will guarantee everything but the battery and bulb for life.

**Circle 145 on Reader Service Card, p 19.**

## LEATHER MASK GOGGLE



Willson Products, Inc., Reading, Pa., says it has two styles of goggles with comfort and safety features that will induce workers to wear them rather than risk eye injury.

The goggle mask is made of high grade, pliable leather, which absorbs and distributes impact shock. The one-piece

(*Please turn to page* 186)

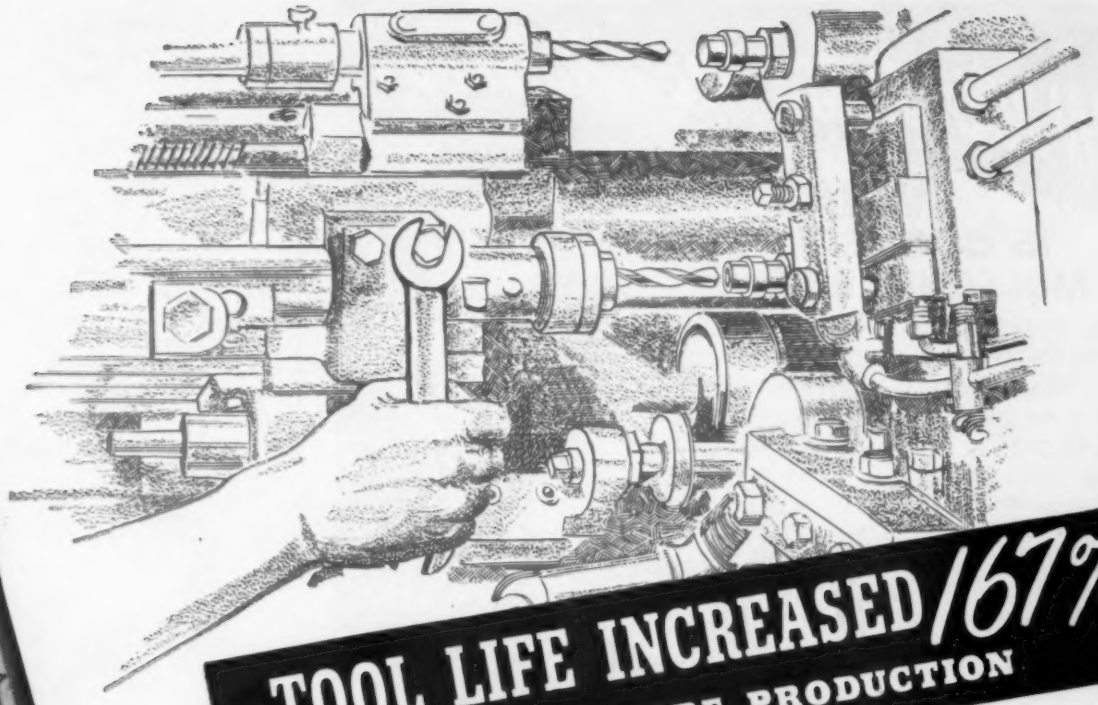

# 100% OF ALL METAL CUTTING JOBS CAN BE DONE AT LOWER COST with Stuart's Wise Economy Plan



Write, wire or phone for details.

D.A. Stuart Oil Co.

2727-31 S. Troy St., Chicago 23, Ill.



# TOOL LIFE INCREASED 167%

## . . . WITH 8% MORE PRODUCTION

## *by using Cleveland drills at correct feed and speed*



For best results in automatic screw machines, you naturally choose the finest, most durable tools—such as the CLE-FORGE High Speed Drill shown here. But this alone is not enough. ◈ A few months ago one of our Service Representatives was making a survey in a customer's plant. On a six-spindle automatic he reduced the speed from 1740 to 1566 r.p.m. and increased the feed from .0035 to .0042 f.p.r. Result: Drill life jumped from 1½ hours *to 4 hours.* ◈ A *Cleveland* Service Representative may be able to effect similar savings for *you.* Contact our nearest Stockroom, or . . .

Telephone Your Industrial Supply Distributor

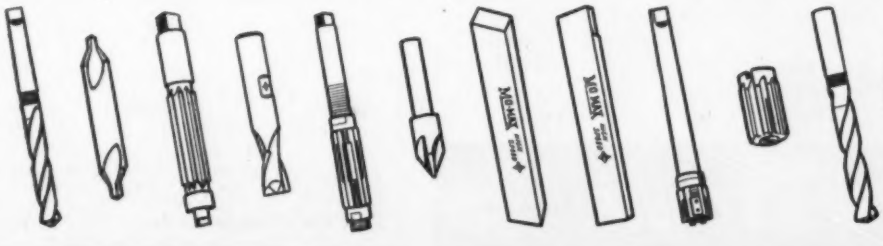
**THE CLEVELAND TWIST DRILL CO.**

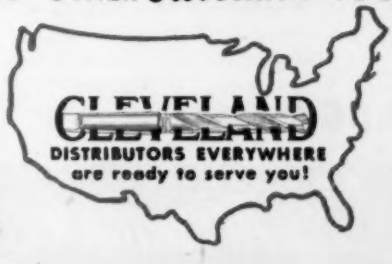
**1242 East 49th Street • Cleveland 14, Ohio**

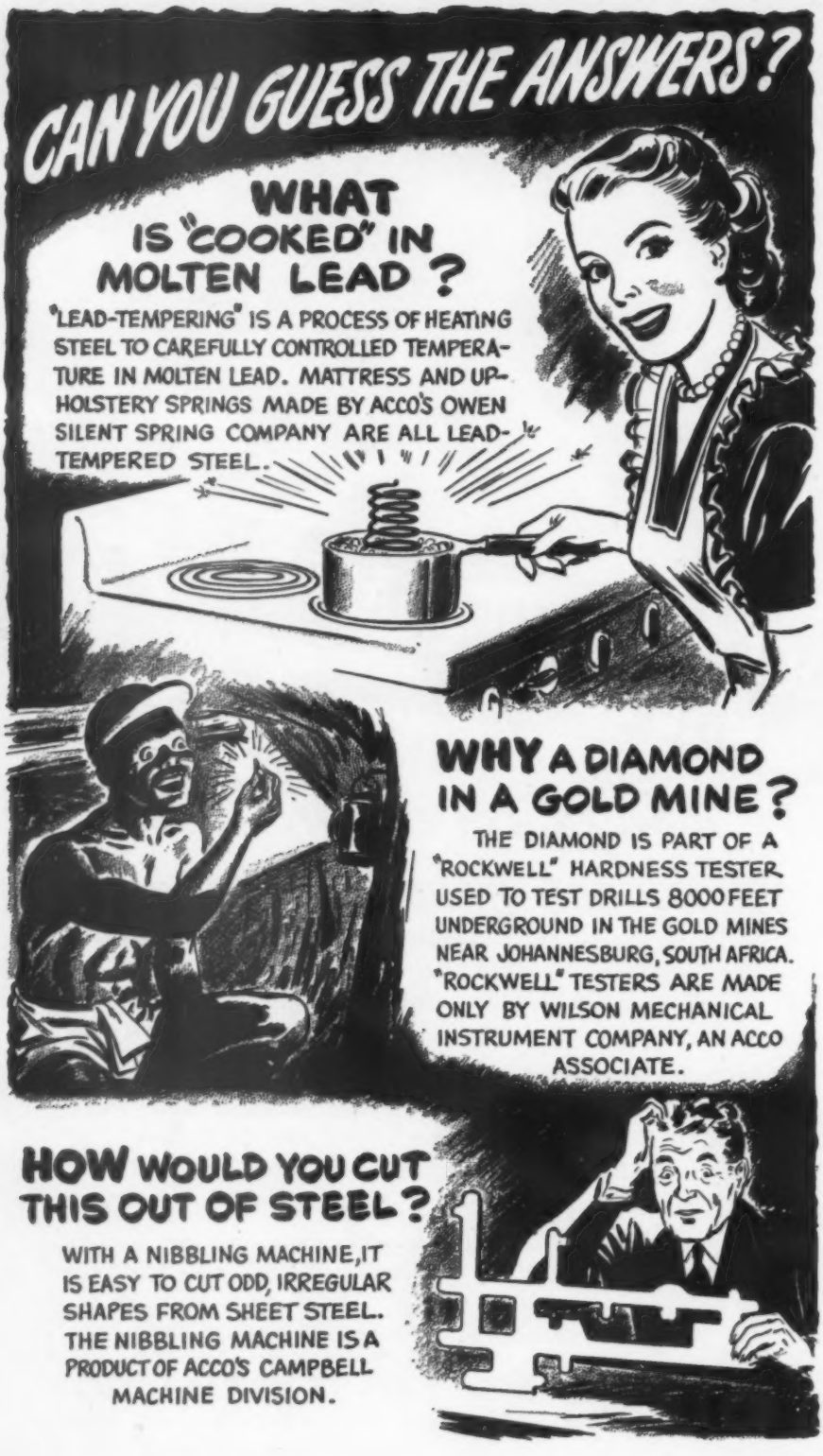
*Stockrooms:* New York 7 • Detroit 2 • Chicago 6 • Dallas 1 • San Francisco 5 • Los Angeles 11

*E. P. Barrus, Ltd., London W. 3, England*

ASK YOUR INDUSTRIAL SUPPLY DISTRIBUTOR FOR THESE AND OTHER *Cleveland* TOOLS








**ACCO Products Include:** *AMERICAN Chain • TRU-LAY and LAY-SET Preformed Wire Rope • TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft • TRU-STOP Emergency Brakes • PAGE Wire, Chain Link Fence and Welding Rods • CAMPBELL Abrasive Cutters . READING-PRATT & CADY Valves and Fittings • READING Steel Castings • PENNSYLVANIA Lawn Mowers • MARYLAND Bolts & Nuts • "ROCKWELL" Hardness Testers • WRIGHT and FORD Hoists • HELICOID Pressure Gauges • MANLEY Automotive Service Equipment • OWEN Silent Springs.*

ACCO

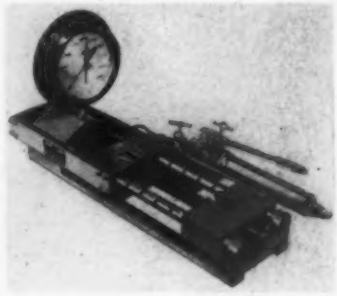
AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT


(*Continued from page* 184)

elastic headband is quickly adjustable, and makes the goggle practical for any face or head size. Style DL31, designed for hot jobs, has deep, well-perforated eye cups to permit air circulation and reduce fogging. Edges are corduroy fabric-bound to absorb perspiration. Style DL48 is indirectly ventilated with two baffled and screened ports on each eye cup, and is used especially for dusty jobs. Indirect ventilation permits free air circulation, but excludes dust, grit, and other flying particles. Both models have impact-resistant "Super-Tough" lenses.

**Circle 146 on Reader Service Card, p 19.**

## PORTABLE TESTING MACHINE



For making field tests where conventional testing equipment is not available, Steel City Testing Machines, Inc., 8843 Livernois, Detroit 4, Mich., offers its Model PO-40 portable tensile tester.

Steel City says the machine is particularly adapted for testing pipe welds and other types of welds where on-the-job testing is preferable, but that it may be used for both laboratory and shop testing. The capacity of the machine is 40,000 lbs., and it will make tests on specimens from 6″ to 13″ long and up to ⅜″ thick and 2¼″ wide. Its operation is hydraulic, by means of a hand pump integral with base. The machine is adjustable and light enough (slightly over 200 lbs.) to be carried by 2 men.

**Circle 147 on Reader Service Card, p. 19.**

## CUTTING TOOLS

The two basic characteristics of cutting tools, hardness and toughness, are present to a high degree in its new line, says the Plew Tool & Metal Heat Treat, Columbia City, Ind.

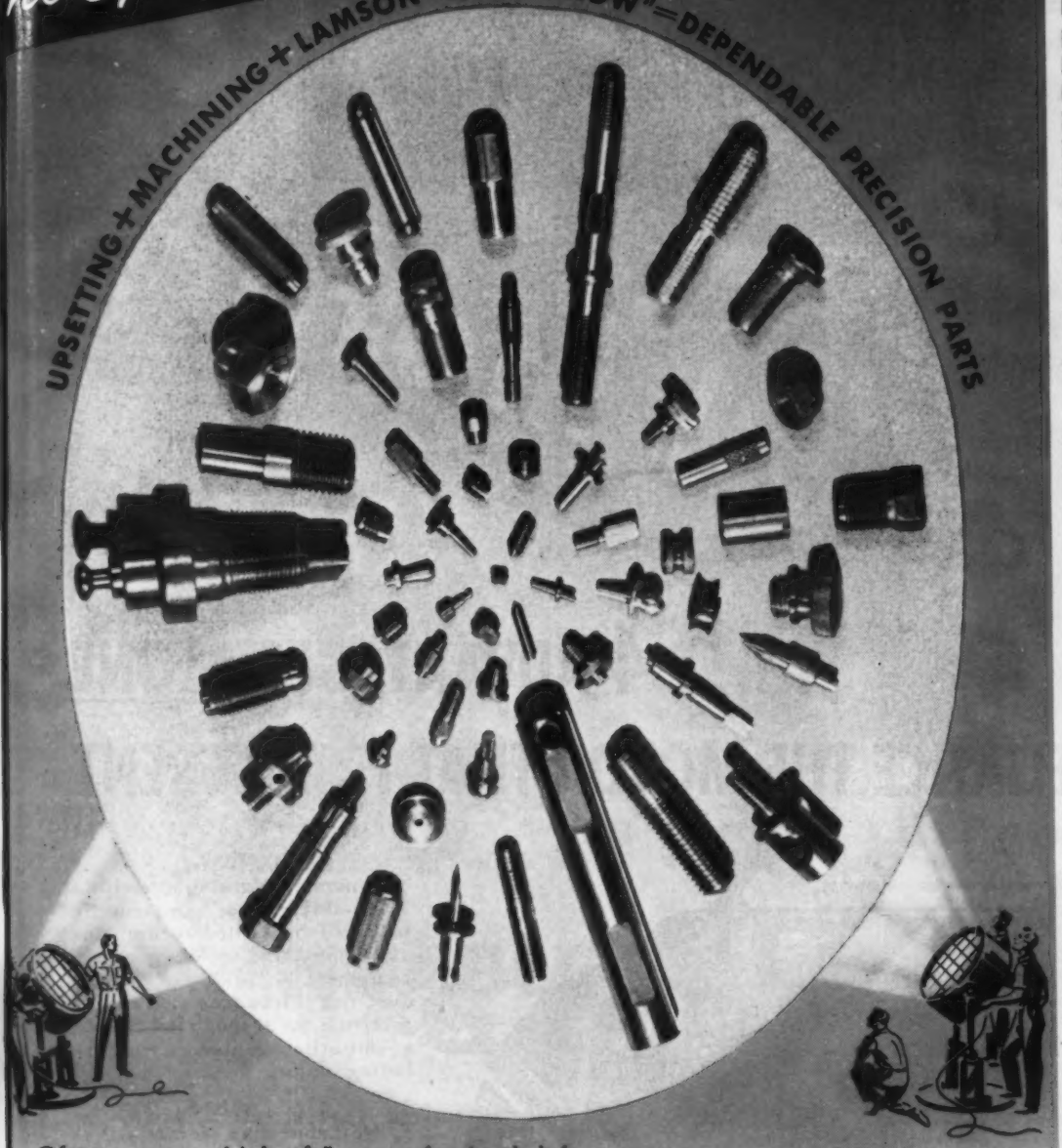
Using a series of high and low heat treatments in sequence, and with an approximate 13% cobalt content, the company claims to have developed bits and blades that have a hardness of "C" 66-68 and a tensile strength of over 300,000 psi. A cut-off blade 3/16″ x 1″ x 6″ will bend .308 before breaking, according to the maker. Standard ground square tool bits come in sizes 3/16″ square x 2″ in length and continue upward in size to include 1″ x 7″. Standard ground flat tool bits range in size from ¼″ x ⅜″ x 3″ to 1″ x 1¼″ x 6″. Ground cut-off blades are available from size 3/32″ x ½″ x 5″ to 5/16″ x 1″ x 6½″.

**Circle 148 on Reader Service Card, p. 19.**

(*Please turn to page* 190)

# The Spotlight's on "Specials BY LAMSON!

UPSETTING + MACHINING + LAMSON "KNOW HOW" = DEPENDABLE PRECISION PARTS



Of course you think of Lamson for headed fasteners.

But did you know that Lamson produces precision Screw Machine Products for many of the country's best known, "blue ribbon" manufacturers?

Within this one organization are modern facilities for hot and cold heading, machining, grinding, broaching, bending, flattening, punching, drilling, heat-treating and plating.

Add to these facilities Lamson's unsurpassed "know how" and you'll understand why it's wise to check with Lamson *first* for small parts production . . . Screw Machine, Upset or a combination.

**THE LAMSON & SESSIONS COMPANY**

General Offices: 1971 West 85th Street, Cleveland 2, Ohio

*Plants at Cleveland and Kent, Ohio • Birmingham • Chicago*

## Lamson & Sessions

"One Dependable Source for All Fastener Needs"

| SEMS | LOCK NUTS | NUTS | STUDS |
|---|---|---|---|
| STOVE BOLTS | LAG BOLTS | WASHERS | RIVETS |
| TAPPING SCREWS | ROPE CLIPS | SET SCREWS | PLOW BOLTS |
| "1035" CAP SCREWS | MACHINE BOLTS | CARRIAGE BOLTS | COTTER PINS |

on any of these fasteners? CHECK—and CLIP this strip.

—CUT ALONG THIS LINE—



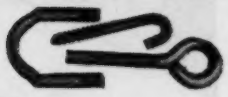
**LAMSON LOCK NUTS:** Economical, vibration-proof. Can be re-used repeatedly.



**SEMS:** Tapping and Machine Screws with Lockwashers attached.



**COTTER PINS:** Steel, Brass, Aluminum and Stainless Steel.



**"BENT" BOLTS:** Including U Bolts, Eye Bolts, Hook Bolts, etc.



**LOK-THREAD STUDS:** Thread locks and seals in standard tapped holes.



**Wire Rope Clips:** Hi-Center saddles, extra-strength U Bolts.



**PLASTIC INSERTS:** To your specifications . . . in production quantities.



**AIRCRAFT FASTENERS:** AN Bolts, Nuts, Screws, Studs and Cotters.



**"1035" CAP SCREWS:** Hi-Tensile heat-treated steel.

**The Lamson & Sessions Company**
**1971 W. 85th St., Cleveland 2, Ohio**

NAME

POSITION

COMPANY

STREET

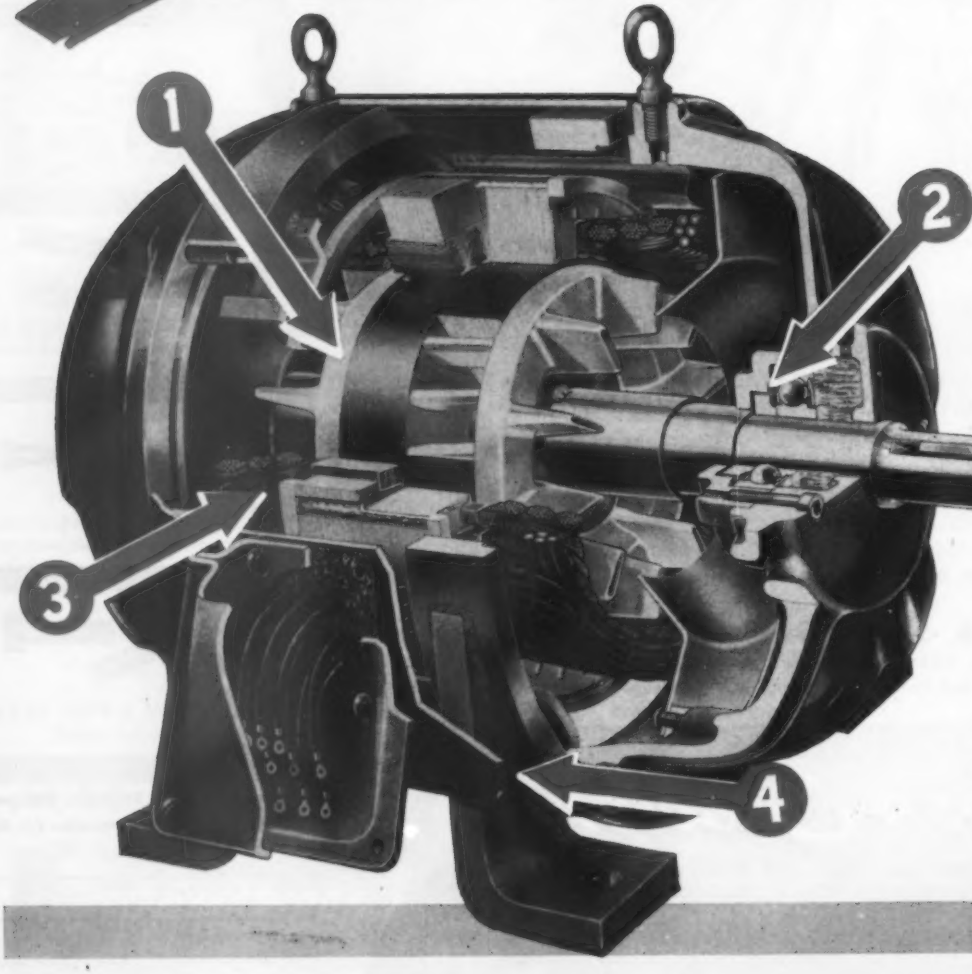
CITY ZONE STATE



# WHY HASN'T SOMEBODY TOLD ME THIS BEFORE?

# "...all motors

## THESE 4 ADVANTAGES ALONE MAKE RELIANCE THE MOTOR THAT IS DIFFERENT




**1 Dynamic Balancing—Precision Fits**—Every motor is dynamically balanced by skilled technicians using latest electronic-principle equipment. Machining of parts to exacting tolerances guarantees precision fits throughout. Result: a smoother-running, longer-lasting motor!

**2 No Lubrication Worries**—Precision Bearing Mounting, with double-shielded ball bearings, assures longer bearing life under all normal conditions, whether overgreased, undergreased or not greased at all. "*You can't grease 'em wrong!*"

**3 Reli-X Insulation** furnishes a new high in the protection of stator windings. Selected materials, exclusive methods and new continuous-sequence applications make this the *unfailing* insulation!

**4 Steel for Strength**—Steel construction, with electrically welded joints, combines maximum strength with minimum weight.

# are NOT ALIKE"



RELIANCE *Precision-Built* MOTORS

## ...are made *better* to deliver

# DEPENDABLE POWER-LONGER!

Reliance has a way of building motors that must be seen to be fully appreciated. Any time we can take a motor user through the modern plants where Reliance *Precision-Built* Motors are made, we can be reasonably sure of another good Reliance customer. We would be delighted to have you make this visit. But if it isn't practical, call in your nearest Reliance representative and *see* the convincing facts he can show you on the precision methods that produce these truly superior motors.

***Sales Representatives in Principal Cities***



**HOW TO SELECT THE RIGHT MOTOR**

Here's a book which digests all the information you should have in selecting the motor that's just right for any job. New torque and current standards recently adopted by the National Electrical Manufacturers Association for A-c. motors are tabulated and explained. And these are further supplemented by more detailed performance data on Reliance *Precision-Built* Motors. Write today for this important new Motor Data—Bulletin B 2101.

**RELIANCE ELECTRIC AND ENGINEERING CO.**

***"Motor-Drive is More Than Power"*** • 1056 Ivanhoe Road, Cleveland 10, Ohio

# Speed Sweep



THE BRUSH WITH THE STEEL BACK

*Sweeps cleaner, faster — Outlasts ordinary brushes 3 to 1!*

**Speed Sweep brushes have a steel back which is the basis of unique design for faster, easier, better sweeping. Block is ⅓ usual size for easier handling. Tufts are longer and more compact, providing "spring and snap" action. Handle is instantly adjustable to height of sweeper—reduces fatigue and strain. Speed Sweep brushes are sturdy—they contain highest grade materials and are constructed for long life. Speed Sweep brushes have been proved by so many firms and under such varying conditions that they are unconditionally guaranteed to meet your needs. Mail coupon today for complete information about sizes, styles and prices.**

***MILWAUKEE DUSTLESS BRUSH CO.***
***530 North 22nd St., Milwaukee 3, Wisconsin***

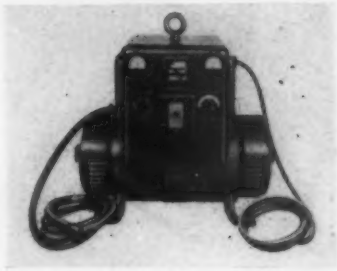
Please send complete information about Speed Sweep Brushes

Name_____

Street Address_____

City, State_____


## BATTERY CHARGER



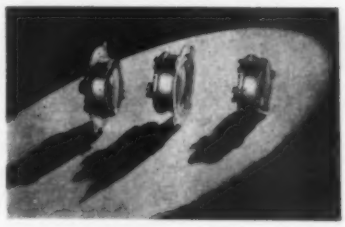
A "Universal" charger for any type of industrial truck batteries has been announced by Motor Generator Corp., Troy, O.

The unit will charge 200 to 500 ampere hour lead-acid batteries of 12, 15, 16, and 18 cell capacity, and/or 150 to 450 ampere hour nickel-iron batteries of 20, 24, and 30 cell capacity. It consists of a separately-excited motor generator set with no-load voltage control of 30 to 60 volts, plus a voltage-drop control.

The no-load voltage control is calibrated for the different cell combinations of the batteries to be charged. After controls are set for the right combination of cells and ampere-hour capacity of the battery to be charged, the actual charge is controlled by the Hobart Y-500 charge control. When charge is completed, the set automatically shuts down, and the battery is disconnected from the charger.

**Circle 149 on Reader Service Card, p. 19.**

## SNAP-ACTION THERMOSTATS



Spencer Thermostat Division, Metals and Controls Corp., Attleboro, Mass., has announced new fixed temperature snap-action Klixon thermostats having enclosed contacts for protection against dust, oil, etc.

The thermostats, designated C4370 types, are suitable for such use as control of unit and space heaters, small water heaters, etc. The controls are operated by the scientifically calibrated Spencer snap-acting disc which eliminates the need for over center-toggle mechanisms, magnets or complicated parts. The disc is mounted externally on the base for fast thermal response. The thermostats can be mounted in recessed wells, in castings, on flat surfaces or sheet metal enclosures, and in space for control of air temperatures. They can be supplied with various temperature differentials in settings from minus 10 to 550F, and are also available with manual reset.

**Circle 150 on Reader Service Card, p. 19.**

(*Please turn to page* 192)

# SCRAP LOSS REDUCED FROM $2665 TO $306 IN ONE MONTH!





Cities Service Industrial Heat Prover analyzes exhaust gases quickly and accurately. Indicates either improper percentage of air or excess combustibles in the furnace gases.

## This remarkable instrument steps up production for Michigan non-ferrous foundry

ONE of the largest producers of propellers for outboard and inboard motors had trouble in the foundry with porous castings.

A Cities Service combustion specialist was called in for consultation. With the aid of the Cities Service Industrial Heat Prover instrument he soon found that the trouble was due to the presence of excess air in the furnace gases and offered suggestions to correct the situation. Result: Scrap loss was reduced from 4100 to 471 lbs. and affected a saving of $2359.

Countless cases of similar results are now on file. If your operation includes industrial furnaces and heat treating units of any size or type, you too can profit from such service. Write today for a free demonstration.

**FREE!** A fact-filled booklet entitled "Combustion Control for Industry" is available upon request. Write Cities Service Oil Company, Sixty Wall Tower, Room 508, New York City 5, N.Y.

**CITIES SERVICE**

# NOW YOU CAN GET SPECIAL HINGES

**Any Size, Shape, Quantity or Finish**
**From the World's Largest Hinge Maker**

You just specify the hinge you want — STANLEY does the rest, from first sketch to finished product. As the world's largest producer of hinges, STANLEY is geared for efficient production to meet your needs—any finish in large or small quantities. Write or phone our nearest office for full information.



PRESSED METAL DIVISION...THE STANLEY WORKS
New Britain, Conn.
New York • Detroit • Los Angeles • Chicago
San Francisco • Seattle

STANLEY
Reg. U.S. Pat. Off.

HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING







## CHATTERLESS COUNTERSINKS

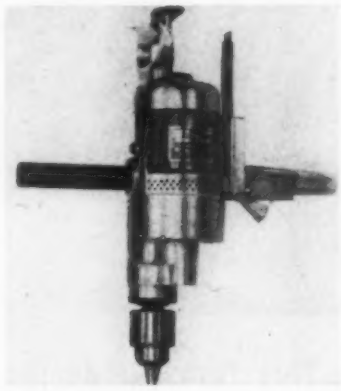


Grobet countersinks, featuring six staggered cutting edges for a shearing cut that eliminates all chatter, are offered in boxes that hold each size separately and securely for proper storage and ready use.

The countersinks are made of high speed steel ground after hardening. The three sets available are: No. CH of 8 countersinks CB 41° (diameter ¼″), to LI 41° (diameter 1″); No. CI of 9 countersinks CB 41° (diameter ¼″); to NJ 41° (diameter 1¼″); No. CI of 11 countersinks CB 41° (diameter ¼″) to PK 41° (diameter 1½″). The manufacturer is Grobet File Company of America, Inc., 421 Canal St., New York 13, N. Y.

**Circle 151 on Reader Service Card, p. 19.**

## TWO-SPEED ELECTRIC DRILL



A new Pioneer 2-speed electric drill made by the Louisville Electric Mfg. Co., Louisville, Ky., has a gear shift arrangement which extends use of the drill from ¼″ to ⅝″ in steel and ¼″ to 1¼″ in hardwood.

With 3 drill settings (high, neutral and low), the operator is able to quickly shift from neutral to low to high while motor is operating, eliminating the possibility of stripping gears. The rpm in the power range is 460 and in the fast range is 880. The drill is powered with a universal motor.

**Circle 152 on Reader Service Card, p. 19.**


**IDLE SURPLUS IS IDLE CAPITAL! CONVERT IT TO CASH . . . LIST YOUR COMPANY'S SURPLUS IN PURCHASING'S CLASSIFIED SECTION NEXT MONTH**

**SEE PAGE 324**

# Greater spindle precision—fewer rejected parts with TIMKEN® bearings in the "Tray-Top" Cintilathe

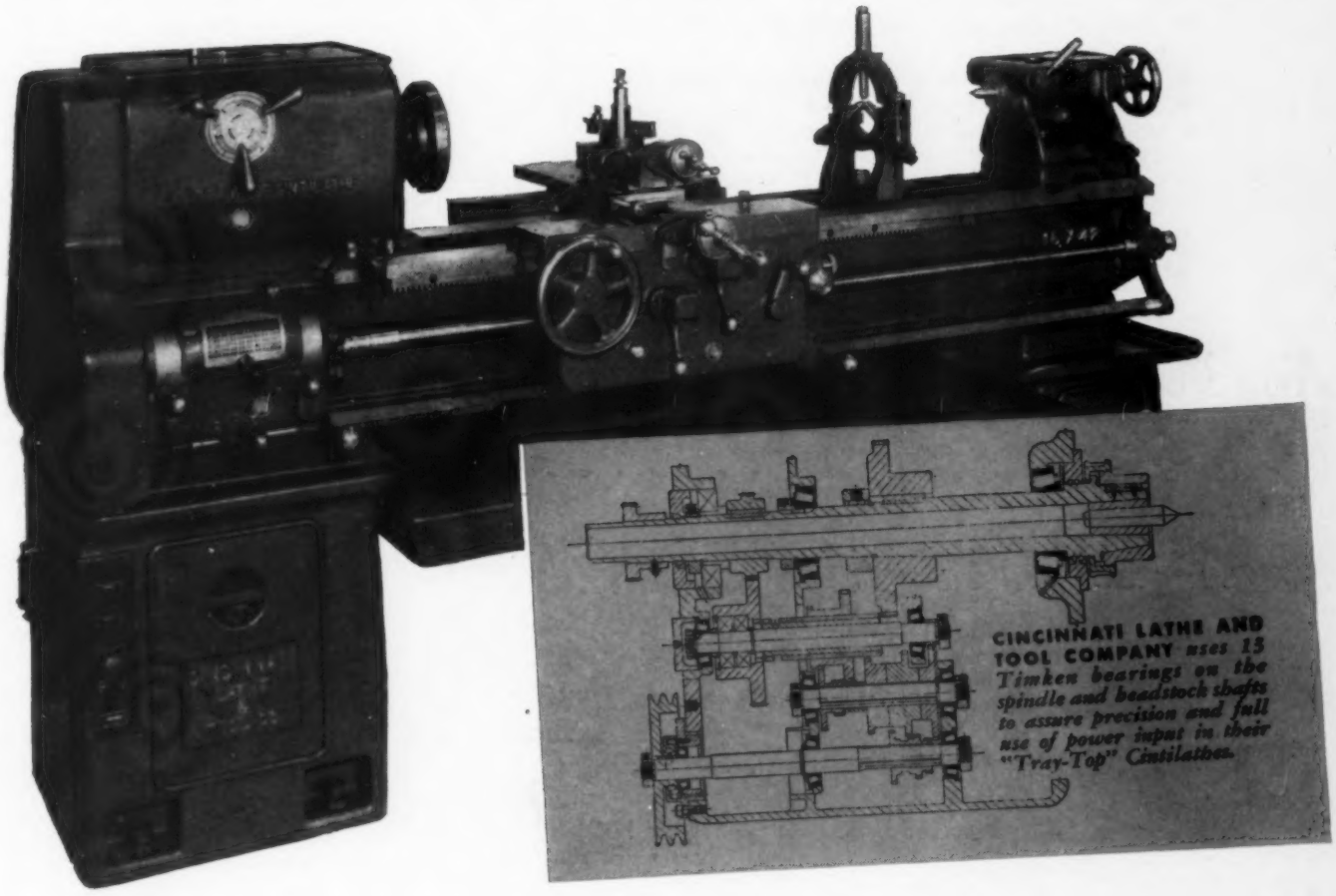
TO keep the spindle rigid and free from chatter and to assure constant precision, the Cincinnati Lathe and Tool Company uses Timken® tapered roller bearings throughout the headstock of their Cintilathe.

Timken bearings keep shafts in positive alignment. Due to their tapered construction, they carry any combination of radial and thrust loads. Manufactured to extreme precision and finished to remarkable smoothness, Timken bearings practically eliminate friction. Full line contact between rolls and races permit maximum load-carrying capacity. And since Timken bearings are made of the finest steel ever developed for tapered roller bearings—Timken fine alloy steel—they last the life of the machine.

With fifty years of bearing research and development behind them, Timken bearings are first choice throughout industry. No other bearing can bring you *all* the advantages you get with Timken tapered roller bearings. Look for the trade-mark "Timken" on every bearing you use. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



*This symbol on a product means its bearings are the best.*




**NEW TIMKEN BEARING CUTS RUN-OUT IN HALF!**

Until now, the Timken "Zero" bearing has been the last word in bearing accuracy. Now Timken offers industry the "Double-Zero" bearing—*twice as accurate* as the "Zero"! Maximum run-out of the new "Double-Zero" bearing is only 75 millionths of an inch—*half* the 150 millionths run-out of the "Zero" bearing.

What an opportunity for manufacturers of machines where extreme accuracy is essential! Available in standard single row types, up to 10" O.D. Write for further information.

**TIMKEN**

TRADE MARK REG. U. S. PAT. OFF.

**TAPERED ROLLER BEARINGS**

TIMKEN 1899 50 1949 YEARS

NOT JUST A BALL ◯ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◯ AND THRUST ⟷ LOADS OR ANY COMBINATION ⟷



*Want Additional Product Information? See Page 19.*

# BUY NOW

all-electric adjustable speed drive

3 to 1 speed range, 3 hp — $413.00*

6 to 1 speed range, 2 hp — $469.00*

20 to 1 speed range, 2 hp — $509.00*



## the ACA motor

- Stepless adjustable speed from a-c power, 3-75 hp
- Completely packaged in a single compact unit
- Speed adjustment at the turn of a dial
- Immediate shipment on ratings through 15 hp

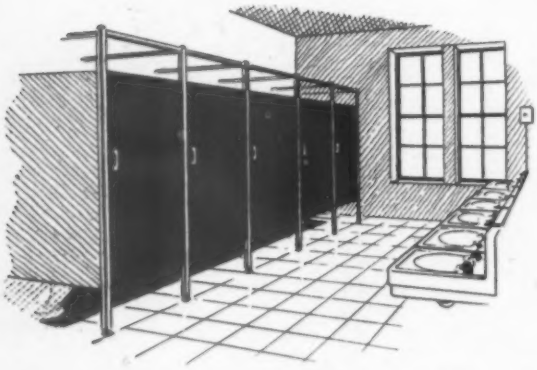
TO ORDER—contact your local G-E Sales Office, or write Apparatus Department, Sec. 752-4, General Electric, Schenectady, N. Y.

*List price. Subject to usual discounts.

GENERAL ELECTRIC

752-4

# How Much Does Your Washroom Maintenance *Really* Cost . . . . . ?



Materials . . . $ ?

Labor . . . . . $ ?

Total . . . . . $ ?

● The sanitation supplies used in washroom maintenance represent a small fraction of the total cost. Under Gerson-Stewart's plan of Systematized Sanitation, experienced maintenance specialists recommend improved products and more effective methods and procedures, whereby total costs are lowered through more economical use of your present plant-keeping personnel. Industrial leaders have benefited from Systematized Sanitation for more than 30 years.

*Write today for booklet about this simple, individualized plan which enables your present personnel to do more tasks—better!*

The GERSON-STEWART Corp.

LISBON ROAD • CLEVELAND, OHIO


## NEW PIGMENT PROVIDES UNLIMITED COLOR RANGE IN RUBBER PRODUCTS

Tough, strong rubber products, both natural and synthetic, formerly obtainable only in black, may now be manufactured in every color of the rainbow as a result of the development of a silica pigment so fine that 300 million particles will fit on the head of an ordinary pin, by the Columbia Chemical Division of the Pittsburgh Plate Glass Company, Pittsburgh, Pa.

"Hi-Sil," developed in the Company's Barberton, Ohio, research laboratories, has been hailed by the rubber industry as a revolutionary development in pigmentation. It is the first silica pigment to be developed which is not a laboratory curiosity but one that can be manufactured in large quantities and at comparatively low cost.

Tested on both laboratory and factory scale for various classes of manufactured rubber goods, Hi-Sil is now available to compounders in quantity, it was stated. In addition to providing a wide color range for functional rubber goods of all types, the extremely fine-particle pigment will make possible many new types of rubber articles which were heretofore impossible to manufacture.

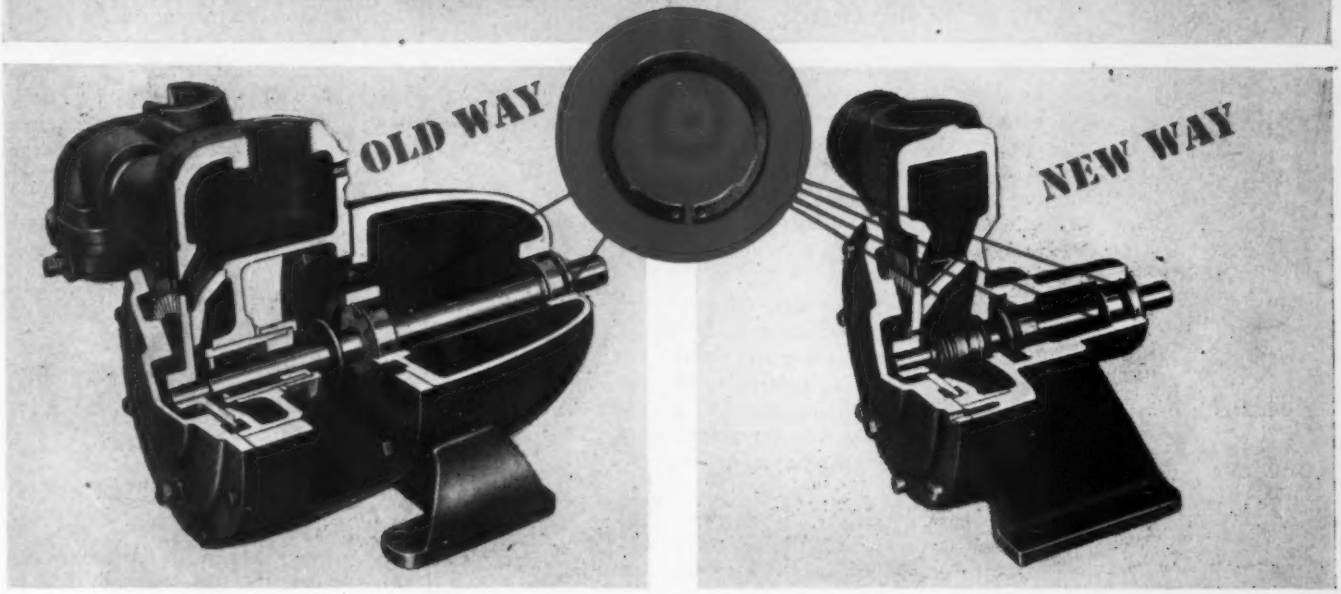
Claimed to be the first practical silica pigment in its field, Hi-Sil is a very absorptive pigment. Particle size is .025 Micron, measured by the electron microscope. Specific Gravity is 1.95. The pH of the pigment can be varied over a wide range, from about 2.5 to about 9.5. Hi-Sil is said to impart high tensile strength, good abrasion resistance and exceptional tear resistance to natural and synthetic rubber compounds. For use in vinyl resin compounds it imparts unique properties desirable for numerous applications.

## NEW ALUMINUM ALLOY ANNOUNCED BY PERMANENTE

New Aluminum alloy 150S announced by Permanente Products Co., 1924 Broadway, Oakland, Calif., is said to offer properties of particular advantage to many metal fabricators who have been previously using 3S or 52S. Over the former it is said to offer the benefits of 20 to 40 percent greater strength in the finished part, uniform grain size in all tempers, clear uniform etched finishes, clear colorless anodized finishes, fast high lustre buffing and high workability in an intermediate temper (150Sh22). It is claimed that manufacturers have found it possible to effect considerable savings, as high as 10 percent, on material costs by being able to reduce the gauge when using 150S. As compared with 52S, 150S offers decided cost advantages where 52S is overstrength for the use made of it, superior workability and no Leuder lines or strain markings in shallow draws.

(*Please turn to page* 196)

# REDESIGN TRIMS LENGTH 5¼ INCHES, CUTS UNIT COST $5.70




Series D Wayne water pump uses machined shoulders to position bearings on shaft. 2 Truarc rings hold bearings in housing. Locknut holds screw-type stuffing box that requires periodic tightening.

New design uses 4 Truarc Inverted rings (2 external, 2 internal) to position shaft, retain bearings. Inverted rings provide shoulders of uniform section height. 1 Standard ring secures maintenance-free mechanical seal.

Redesign with Truarc Rings helps save $5.70 per unit for Wayne Home Equipment Company, Inc., Fort Wayne, Ind. It gives them a more compact product, eliminates a separate bearing pedestal and a skilled-labor grinding operation. It facilitates use of maintenance-free mechanical seal instead of old type stuffing box.

Redesign with Truarc Rings and you too will cut costs. Wherever you use machined shoulders, nuts, bolts, snap rings, cotter pins, there's a Truarc Ring that does a better job of holding parts together.

Truarc Rings are precision engineered. Quick and easy to assemble, disassemble. Always circular to give a never-failing grip. They can be used over and over again.

Find out what Truarc Rings can do for you. Send your blueprints to Waldes Truarc engineers for individual attention, without obligation.

## REDESIGN WITH 5 TRUARC RINGS GIVES THESE BIG SAVINGS

- *Cuts length 5¼ inches*
- *Cuts total labor 15.3%*
- *Eliminates skilled-labor grinding operation*
- *Saves 38.3% materials*
- *Allows use of stock-size shaft, smaller bearings*
- *Eliminates separate bearing pedestal*

**TOTAL UNIT SAVING . . . $5.70**



**WALDES TRUARC**

REG. U. S. PAT OFF

**RETAINING RINGS**

WALDES KOHINOOR, INC., LONG ISLAND CITY 1, NEW YORK

WALDES TRUARC RETAINING RINGS ARE PROTECTED BY U. S. PATS. 2,302,948; 2,056,454; 2,418,852 AND OTHER PATS. PEND.

Waldes Kohinoor, Inc., 47-16 Austel Place P-111
Long Island City 1, N. Y.

Please send 28-page Data Book on Waldes Truarc Retaining Rings.

Name_____

Title_____

Company_____

Business Address_____

City_____ Zone_____ State_____ ★

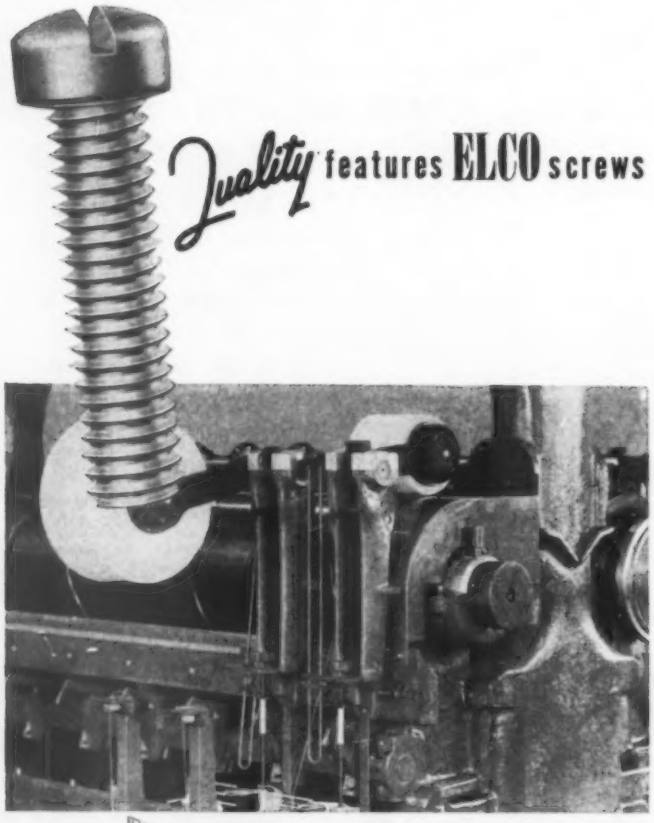
BARBER COLMAN EMBLEM OF QUALITY

AUTOMATIC SPOOLING MACHINES

Picture the kind of accuracy needed to keep thousands of parts synchronized . . . to maintain winding speeds up to 900 yards per minute . . . to operate a modern textile spooling machine. This kind of a job requires screw fastenings with constant holding power, with snugly fitting threads to resist vibration, with truly centered heads to hold parts in accurate alignment.

Elco screws are made accurately and precisely under production control so that they will meet these user needs. Snug fitting threads, perfect heads and slots, easy starting threads . . . these features make for dependable assembly and consistent service in operation.

If you have a problem of matching fastener accuracy with the precision of other component parts, use Elco screws on your next order for a new experience in dependable trouble-free fastening.



*Quality* features ELCO screws

ELCO Screws

ELCO TOOL AND SCREW CORPORATION

1912 BROADWAY ROCKFORD, ILLINOIS

WOOD SCREWS • MACHINE SCREWS • MACHINE SCREW NUTS
DRIVE SCREWS • CAP SCREWS • LAG SCREWS • SPECIAL SCREWS
TAPPING SCREWS • STOVE BOLTS • PIPE PLUGS

## CARTON PRINTING MACHINE SLASHES COSTS

The accompanying illustration shows carton printing machine made by the Industrial Marking Equipment Co., 7 E. 48th St., New York, N. Y., used by the Export Department of Brown & Williamson Co., Petersburg, Va., for marking supplementary information on flat cartons. It is explained that formerly these markings were done by use of stencil and brush, and that five persons were needed to handle daily production.



**The capacity is 2400 impressions per hour**

Now, one person with the aid of the machine does the same work in three or four hours. The machine is motorized and is set for speed of 2400 cases per hour. This particular machine is styled the No. 7 Auto-Printer, and it is designed for imprinting cartons, multi-wall bags, wooden shooks, etc. It is equipped with ¼ hp motor and enclosed reducer.

* * *

## ENCYCLOPEDIA OF PRODUCT MARKING GRATIS

Helpful shipping data and suggested marking applications are contained in the new Stencil Section of the Pannier Encyclopedia of Product Marking, now available from The Pannier Corporation, Pannier Building, Pittsburgh 12, Pa. Also included is information on the stencils, inks and stencil supplies made by the company.

The entire Pannier Encyclopedia of Marking, of which the new material is a part, is expected to be finished before the end of the year. The larger work will provide a ready-reference guide to correct marking usage. It will provide a simplified classification of the specific kinds of marking that apply to product and material needs, these being determined by the methods of application and also by the characteristics of the mark itself, such as free hand, printing, stamping, embossing, stenciling, etching, molding, and branding. Each classification will be fully defined, and provided with an individual section showing representative marking devices used to apply that particular kind of mark and suggested uses.

It will also contain a section on inks, and a "Quick Fact" chart for selecting the most suitable ink for each marking application.

(*Please turn to page* 198)



**ENGINEERING**
**in cellular rubber**
**that keeps pace with**
**your *imagination***

The pneumatic cushioning, sound damping, sealing and insulating properties of rubber and air are combined in *Spongex* Cellular Rubber and precisely engineered to do a range of jobs as wide as your own imagination.

*Spongex* is a special cellular rubber with lively resiliency and uniform cell structure. It is rated exceptional in its resistance to temperature extremes, moisture, dilute acids, corrosive vapors, and aging.

*Spongex* is yours in practically any form — molded shapes — die-cut designs — or in standard bulk sheets, slabs, strips, cord, tubing or fabric bonds.

For improvement of your present products or in the development of new ones, *Spongex* deserves your serious consideration. Send for a generous sample of *Spongex* for testing now.
The Sponge Rubber Products Co.,
122 Derby Place, Shelton, Conn.
Sales Offices in principal industrial centers.

SRP **The Sponge Rubber Products Co.**

SPONGEX* CELL-TITE* TEXFOAM* TEXLITE* TEXLOCK

*Trade Marks Reg. U. S. Pat. Off.

*Sometimes it costs less to use Steel that costs more!*

# Here, U·S·S COR-TEN used cuts weight 18%



*** The bigger the tank the bigger the saving**

In the 42" x 10' Stonesteel tanks under construction above, the use of COR-TEN reduces weight 553 lb., saves $5.00 on material cost. When these lighter COR-TEN tanks were shipped to a housing development in Norfolk, Va., freight charges were $9.84 less, bringing the total savings per tank to $14.84.





USS

# in place of carbon steel

# cuts material cost 10.8%

# cuts shipping cost 16%

**During the past 12 years, U·S·S Cor-Ten—the pioneer high strength steel—has earned a world-wide reputation for reducing costs by reducing weight in freight cars, buses, trucks and other mobile equipment. That's exactly what Cor-Ten was developed for, so we were not surprised.**

**But here is the story of a money-saving application, far outside the transportation field, that aptly illustrates how stationary equipment of many kinds can be built advantageously of U·S·S Cor-Ten in place of carbon steel—not only to improve the product but to reduce its cost.**



SEVERAL years ago the Cemline Corporation of Cheswick, Pa., developed a hot water storage tank designed to prolong life even in those areas where water supplies are unusually corrosive. A special hydraulic cement lining that prevents corrosion by eliminating any corrosive water-to-metal contact did the trick. But in solving the corrosion problem the cement lining created another. Its substantial weight when added to the weight of the heavy carbon steel shell resulted in a unit that was unwieldy to handle and difficult and costly to install.

A lighter tank was definitely called for. This need was emphasized with every increase in freight rates, and as more and more tanks were shipped to distant markets. The question was, how to reduce weight and still meet high strength requirements. Cemline engineers found the answer in U·S·S Cor-Ten.

Due to the protective lining, interior corrosion could be disregarded, so they were able to take full advantage of U·S·S Cor-Ten's high yield point (50,000 psi.) and to use it in gages 40% lighter than the carbon steel gages previously required. This 40% reduction in cylinder weight reduced the total tank weight 18%.

These weight savings resulted in cost savings all along the line. Cost of the steel per cylinder was 10.8% less (because the weight saved more than offsets Cor-Ten's slightly higher cost). The lighter tanks were handled with less trouble and less expense. And, freight charges on every shipment—on steel from the mill, on the tanks to the customer—were reduced almost 16%.

To show what this means in actual dollars and cents savings, take the case of the 45-gallon Stonesteel tank (shown at right) produced by the thousands for residential use. Replacing the carbon steel shell, .138″ thick, with U·S·S Cor-Ten .0828″ thick, reduced weight 42 lb., cut steel cost 35 cents. When these tanks were shipped to Richmond, Va., freight charges were 72 cents less for the lighter tanks, making a total saving per tank of $1.07.*

"U·S·S Cor-Ten," says the President of Cemline Corporation, "does more than reduce our costs. Because of its stiffness it forms more smoothly on our bending rolls, and fluting difficulties formerly experienced have disappeared. In welding, too, Cor-Ten behaves better than straight carbon steel. It does not seem to burn away so readily under the arc and thus makes welding easier and faster. We know our customers have less trouble and less expense handling these lighter Cor-Ten tanks. And because Cor-Ten has from 4 to 6 times greater atmospheric corrosion resistance we have every reason to believe that Stonesteel tanks made of U·S·S Cor-Ten are much less likely to rust when exposed to external condensation, when leaky fittings drip or when the enameled surface is damaged in shipping or installation. That's why, for all our tanks, except where codes require flange steel construction, we've standardized on U·S·S Cor-Ten."



AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## U·S·S HIGH STRENGTH STEELS

U·S·S COR-TEN · U·S·S MAN-TEN · U·S·S MANGANESE-NICKEL-COPPER

United States Steel Corporation Subsidiaries
Room 2088 Carnegie Building, Pittsburgh 30, Pa.

☐ Please send me a copy of booklet showing how U·S·S Cor-Ten saves money in building Stonesteel tanks.

☐ Please have a High Strength Steel representative call on me.

Name.....

Position.....

Company.....

Address.....

City.....Zone.....State.....

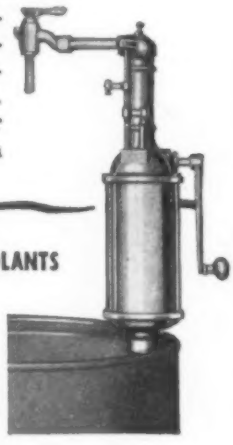
UNITED STATES STEEL



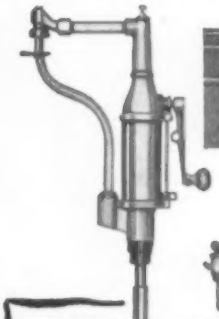
"Yes Sir, Meet My Friends of 30 Years!"

*"I've been buying dependable Phillips single stroke hand operated Barrel Pumps for 30 years . . . they sure save time and prevent waste."*

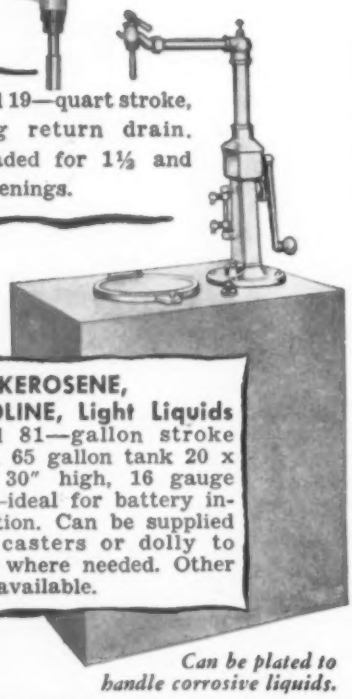
Model 174—gallon stroke, quantity stops, adjustable suction. Threaded for 1½ and 2" drum openings.



FOR LUBRICANTS & COOLANTS



Model 19—quart stroke, swing return drain. Threaded for 1½ and 2" openings.



FOR KEROSENE, GASOLINE, Light Liquids
Model 81—gallon stroke pump, 65 gallon tank 20 x 27 x 30" high, 16 gauge steel—ideal for battery installation. Can be supplied with casters or dolly to move where needed. Other sizes available.

*Can be plated to handle corrosive liquids.*

WRITE FOR PRICES AND FREE CATALOG TODAY!

**PHILLIPS PUMP & TANK CO.**

5030 Brotherton Rd.
Cincinnati 9, Ohio


## RYERSON MARKETING LEADED, FREE MACHINING STEEL

Joseph T. Ryerson & Son, Inc., steel distributors, are again marketing a leaded, free machining steel sold under the manufacturers' copyrighted trade name of Ledloy.

Leaded steels were first manufactured by Inland Steel Company prior to World War II, after many years of research. During the war and in the post war period, production of leaded steels was curtailed and only recently has manufacture been resumed. Further experiments and tests indicate that Ledloy is the most machinable steel available in the United States today.

Though a machinability rating for Ledloy has not been established, it is said that the open hearth screw stock now being produced machines from 30% to 50% faster than AISI B1113 which has long been accepted as the fastest cutting screw steel. Furthermore, it is said that cutting tools last from 50% to 200% longer between grindings.

According to the Ryerson company, Ledloy machines to a smoother finish than other free cutting screw steels, and provides a better base for plating. As Ledloy is an open hearth steel, it has good strength and ductility and will carburize better, with a sounder cross section than free machining Bessemer steels.

A bulletin giving more detailed information on Ledloy screw steel is available and may be secured by writing to Joseph T. Ryerson & Son, Inc., P. O. Box 8000-A, Chicago 80, Illinois.

' ' '

## ACID-RESISTANT RESIN

For wood tanks and concrete floors punished by daily contact with corrosive materials, Carboline Co., 7603 Forsythe Blvd., St. Louis 5, Mo., suggests coating with Carbo-Flex, a resin with resistance to acids, alkalis and solvents at temperatures as high as 325°.

The new material, which is also claimed to stand up well under foot traffic and material handling, consists of a liquid and powder which are mixed into a mortar-like consistency and applied by trowel. It won't sag when applied to walls or the sides of tanks in layers of about 1/16" according to Carboline, and sets hard and brittle, but with a flexibility of from 7% to 15%. Its setting time is 2 to 20 hours, depending on the temperature. The material will go over new as well as old wood. Carboline says that although the resin's value for lining wood tanks and protecting concrete floors has been the only one established, there may be many other applications.

(*Please turn to page 202*)

SEE CLASSIFIED SECTION
PAGE 324


**For—**

**✓Top quality rivets**

**✓Service you'll like**

It's a difficult thing to put into words . . . but easy to prove. Next time you need tubular or split rivets, "buy American," as so many leading manufacturers do. See if you don't find us the kind of source you like — ready, willing and able to supply exactly what you want, when you want it.

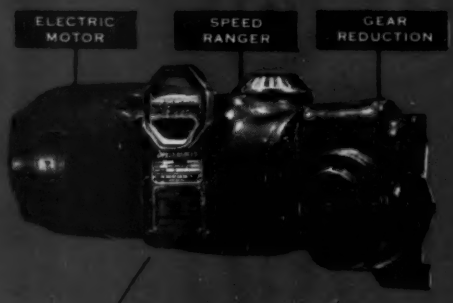
**Tubular and Split Rivets . . . of all metals . . . for all industrial applications.**

Buy . . . . AMERICAN Tubular and Split RIVETS

**AMERICAN RIVET COMPANY**
*(An Illinois Corporation)*
1313 W. Congress St., Chicago 7, Ill.

On thousands of applications in every field of manufacture, stepless variable speed operation assures exactly the right speed for every operation . . . for every operator . . . the right speeds for each change in the consistency or shape of the material being processed. Such variable speed operation pays off in higher rates of production, a more uniform better quality product and more efficient performance of your equipment and your operators.

Master Speedrangers provide this infinitely variable speed in an all-metal, mechanical variable speed unit whose compactness and durability are extra features which help you make a good job better. And nowhere else will you find variable speed drives that are so flexible, so easily adaptable and in such a wide range of types and sizes.




## makes a good job better

## again and again variable speed operation

For example, look at the plastic forming machine shown below. The Speedranger, on the drive unit incorporates an electric motor, a variable speed unit and a gear reduction . . . all standard Master units that easily combine into one compact, integral power package. This provides exactly the right speed, the right features, in a unit that you can mount right where you want it.

Probably you will not need this same combination of features. However, the next time you need a drive for material processing, handling, and conveying equipment; mixers and agitators; welding-positioners; machine tool drives; testing and calibrating equipment . . . to name only a few . . . see what a really remarkable job Master Speedrangers can do for you. Write for Data 7525, new twenty-four page booklet on Speedrangers.

**THE MASTER ELECTRIC COMPANY**
**DAYTON 1, OHIO**



especially when you use

MASTER SPEEDRANGERS




*WHILE* fully 90% of your sleeve bearing requirements are available from stock, Johnson Bronze can furnish all styles of sleeve bearings for special applications. Johnson engineers are working constantly with manufacturers on research and on designing bearings for specific uses. They are capable and ready to advise you on the right style and correct design for economical and efficient service on any equipment you produce. These bearing specialists have designed Johnson Bearings for other manufacturers at 20% to 50% of the cost of other types and have helped reduce installation and maintenance costs. If you have a bearing problem of any kind, consult the Johnson Bronze representative in your territory about this engineering service, or write direct.



BRONZE and BABBITT



STEEL and BABBITT



SHEET BRONZE
*Plain or graphited*



CAST BRONZE
*Plain or graphited*



BRONZE ON STEEL
*Plain or graphited*

Johnson Bronze
SLEEVE BEARING HEADQUARTERS
450 SOUTH MILL STREET · NEW CASTLE, PA.

## NEW METAL FORMING PROCESS MAKES FOR BIG SAVINGS

Through the use of a new method of metal forming known as Marform, developed by engineers of The Glenn L. Martin Co., Baltimore, Md., formed sheet metal parts now can be produced at savings as high as 50%, it is claimed. Martin engineers state that the new method can produce savings of hundreds of thousands of dollars annually for the aircraft industry. Farther afield, in production for other industries requiring metal forming, it said that the process can effect economies running into high figures.

It is stated that the new method results in a substantial increase in the rate of production of numerous types of detailed parts, and a considerable decrease in labor and tooling costs. Parts produced by the new method are held to close dimensional tolerances usually obtained only by expensive tooling.



**Variety of parts formed by the Marform process. Metals used include aluminum alloys and stainless and deep drawing steel. Parts could be formed in other metals including copper, magnesium or brass. Cup in upper left hand corner has drawn depth of 8⅜"; box is 12"x18".**

Using the Marform process it is possible to form stainless steel exhaust stacks, for example, with important reductions in tooling cost and at a manufacturing rate increased over ten-fold in comparison with coventional methods. The estimated rate of production is 50 per hour compared with the drop hammer rate of 3 or 4 per hour for comparable pieces.

In the forming of exhaust stacks, uniform cross-sectional thickness is very important to attain the required strength and to increase service life. A variation greater than 5% in material thickness is unusual in severely formed parts made by the process.

In addition to simple draw operations, the process can be utilized to form and trim flanged parts such as airplane nose ribs, entirely free of wrinkles. A comparable piece formed in a conventional manner requires about 15 minutes of bench work to hammer wrinkles out of the flange. The production rate by the Marform process is 120 per hour, compared to three to four pieces in the conventional manner.

Sheet metal parts can be made to a tolerance of plus or minus .002 inches. A

(*Please turn to page* 204)

# Specify Thermoid Steam Hose

## Powerflex Wire Braid Steam Hose

Unequalled for strength and flexibility, it offers more capacity, greater safety, longer wear. The tough, thick, heat-resisting inner tube is of specially compounded black rubber . . . high-tensile steel wire braids safeguard against bursting . . . asbestos braid dissipates heat and firmly bonds the cover to the hose body. Special cover is heat and abrasion resistant. Furnished in sizes from ½" to 2½", in lengths up to 50 feet. An all-purpose steam hose for all pressures up to 200 psi.




## Hi-Temp Steam Hose

Mandrel-built—special heat-resisting rubber tube . . . braided asbestos-yarn reinforcement . . . heat and wear resistant cover. Furnished in sizes from ½" to 2" inside diameter in 25 or 50 foot lengths. A lighter weight all-purpose steam hose for superheated steam up to 200 psi.




## #300 Steam Hose

Heat-resisting rubber tube. Cotton fabric reinforcement. Heat and wear resistant cover. Furnished in sizes ½" to 2½", in 25 and 50 foot lengths. For general service where steam pressure does not exceed 150 psi.




**These latest developments** in steam hose are typical of the results obtained through Thermoid's continuing research and study of product applications. Thermoid's planned program of product research and development assures you of maximum service and lowest operating costs whenever you specify Thermoid Industrial Rubber Products.

It will pay you to *Specify* Thermoid!

*Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.*

**Thermoid Company**

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U.S.A.
*Industrial Rubber Products • Friction Materials • Oil Field Products*

# NEW SOUTH BEND 14" Drill Press



**$98.00** f. o. b. factory; bench model with built-in light, chuck, motor pulley, V-belt, cord, and switches; less motor.

South Bend presents this new 14" Drill Press as a companion to the South Bend Precision Lathe. It is built with the same high standards of accuracy and skilled workmanship. It is a superior tool that is unsurpassed for accuracy, easy operation, versatility and dependable performance.

***FEATURES and SPECIFICATIONS***

**BELT TENSION RELEASE**
Quick-acting belt tension release lever simplifies speed changes. Keeps tension correct.

**BUILT-IN LIGHT**
Provides shielded illumination for work area. Separate on-off switch.

**SPINDLE**
Free-floating design prevents misalignment, side thrust, and whip. Travel . . . . . 4"

**BALL BEARINGS**
Sealed, precision type. No oiling. 2 on spindle drive unit, 2 on spindle.

**QUILL BEARING ADJUSTMENT**
Compensates for wear.

**DEPTH GAUGE**
Graduated in inches. Adjustable collars control feed and return.

**RUGGEDLY CONSTRUCTED**
Precison-built for industrial and all other types of shops.

**TWO MODELS**
Bench or floor type.

**CAPACITY**
Maximum drill size in iron or steel . . . . ½"
Drills to center of 14" circle.

**CHUCK**
Capacity . . . . 0 to ½"

**SPEEDS**
Four—655 to 4530 r.p.m.

**CHUCK TO BASE DISTANCE**
Bench Model . . 17"
Floor Model . . . 46½"

**TABLE SIZE**
10" x 10" . . Tilt Type

**COLUMN**
2¾" diameter. Accurately ground.

**HEIGHT**
Bench Model . . . 35½"
Floor Model . . . 65½"

**SHIPPING WT.**
Bench Model . 170 lbs.
Floor Model . 213 lbs.

**MOTOR REQUIRED**
⅓ h.p., 1725 r.p.m. Vertical mounting. On-off switch provided.

**SOUTH BEND LATHE WORKS**
*Building Better Tools Since 1906*
434 E. Madison St., South Bend 22, Ind., U.S.A.


(*Continued from page* 202)

tolerance of plus or minus .005 is commonly attained on parts where the shape is sufficiently rigid to maintain such accuracy.

Preliminary but thorough testing of the Martin Marform process indicates that it will offer the following detailed advantages over conventional forming practices:

(1) It will form sheet metal to compound curvatures and with deep drawn flanges in a manner to preclude wrinkling of the metal during the forming operation.

(2) The Marform process permits deep draws in harder metals than is possible with conventional metal forming techniques.

(3) Eliminates finish forming of parts by hand as now required on parts formed with rubber in the hydro-press and on some die-formed parts.

(4) Several different parts, of complicated contours, each having similar pressure curves, can be formed at the same time.

(5) Parts can be formed of varied materials and thickness within a reasonable range with little or no effect on tooling.

(6) The material wall thickness in a deep drawn part is maintained practically uniform from the blank to the finished formed part.

(7) Surface finishes of the metal and coatings, such as some paints and plastics, are not affected by the forming operation.

(8) The Marform process can be adapted readily for hot forming.

(9) Strains in the formed parts are distributed more uniformly throughout the piece, resulting in formed parts relatively free of internal strain concentration.

(10) This process makes possible such reductions in tooling costs that it offers a great advantage to low as well as high volume production.

(11) The Marform process offers considerable economies for those industries which have frequent product design changes.

* * *

## NEW BATTERIES CRANK ENGINES AT 65° BELOW ZERO

Batteries that will crank the engines of tanks, trucks, busses and other vehicles in temperatures as low as 65 degrees below zero now are being produced for the government and for some highly specialized civilian applications, according to recent announcement by the Willard Storage Battery Company.

Two radically new developments enabled Willard to create the new batteries. First, Willard engineers developed a new active material for use in the battery plates. Second, they devised a means of building, at commercially practicable costs, strong, exceptionally thin plates, which permitted the use of many additional plates and provided a corresponding increase in the plate area exposed to the action of the battery acid.

Both the new active material—a vapor-

(*Please turn to page* 206)


# Heavy-Duty GEARS



**Cutting the teeth in a large diameter spur gear in the Simonds shop.**

## LARGE GEARS
### OF ALL TYPES
***up to 12 ft. dia.***

When you need large or heavy-duty gears for new industrial equipment—for special machinery—for repairs or replacements—call on SIMONDS GEAR where they have been a specialty for more than 50 years. SIMONDS GEAR assures you of personalized attention to your specific requirements—faithful reproduction of your most exacting specifications—and faster service because SIMONDS' production is geared to specialized work. For all types of heavy-duty gears ranging to 145" dia. in materials including cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite—send your inquiry to SIMONDS GEAR.

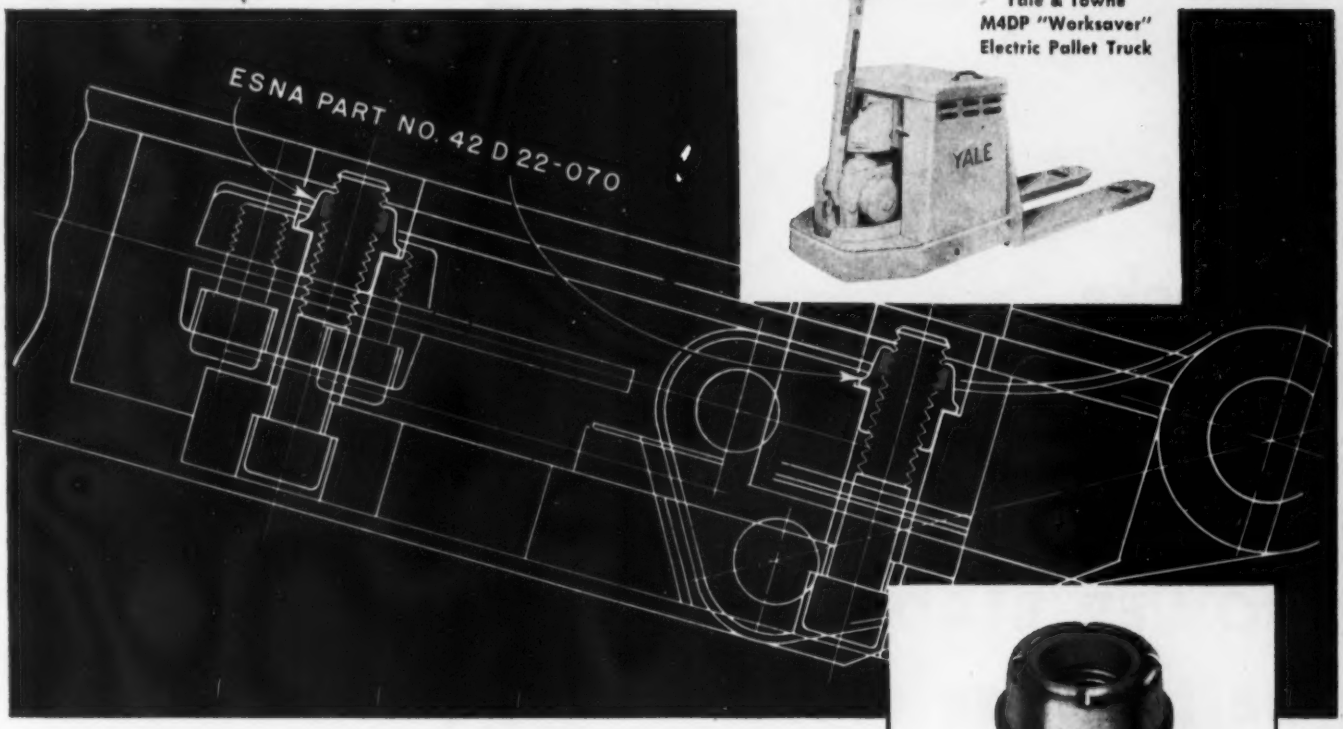
**Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.**

SIMONDS GEARS

**THE SIMONDS GEAR & MFG. CO.**
LIBERTY at 25TH · PITTSBURGH 22, PA

# Self Locking Spline Nuts

## FOR COST-CUTTING PRE-ASSEMBLY METHODS







Yale & Towne
M4DP "Worksaver"
Electric Pallet Truck

### —The Red Elastic Collar protects inaccessible bolted fastenings from failures due to VIBRATION!

After testing many types of fastenings Yale & Towne selected ESNA spline nuts as the solution for the blind mountings on the front and rear assemblies of the M4DP "Worksaver" Electric Pallet Truck featured in this ad. Loose bolts at these inaccessible locations meant loss of adjustment and mechanical wear. Their research proved that self-locking connections at these application points provided protection against unnecessary down time . . . added assurance against service calls and repairs.

This is a typical example of the growing industrial acceptance gained by ESNA spline nuts . . . especially designed for easy driving into soft gray iron, magnesium or aluminum castings. By means of this simple installation the casting is given a threaded member; a tough drilling operation is speeded up because the drill is allowed to run through the casting . . . costly tapping operations are eliminated. The self-locking collar does away with expensive cap screw lock wiring and fully protects inaccessible or blind mountings from operating failures.

In addition, if dis-assembly is required, ESNA spline nuts remain securely positioned for quick reinstallation and the famous Red Elastic Collar provides adequate locking torque for repeated re-use.

This is only one of many types of standard Elastic Stop Nuts available for special industrial fastening problems.

**HERE'S A CHALLENGE:** Send us complete details of your toughest bolted trouble spot. We'll supply test nuts—FREE, in experimental quantities. Write: Elastic Stop Nut Corporation of America, Union, N. J. Representatives and Agents are located in many principal cities.

ESNA TRADE MARK



THE FAMOUS RED ELASTIC COLLAR IS VISIBLE EVIDENCE OF LOCKING SECURITY

**Threadless and permanently elastic, it provides these 4 outstanding features:**

1. Protects against nuts loosening due to VIBRATION
2. Keeps locking threads CORROSION FREE
3. Provides for accurate BOLT LOADING
4. Seals against LIQUID LEAKAGE along the bolt threads

## ELASTIC STOP NUTS




*OVER 450 TYPES AND SIZES IMMEDIATELY AVAILABLE FROM STOCK*

# MICROSCOPIC CONTROL




## helps to make and to keep MILFORD ALL-HARD REZISTOR POWER BLADES *better than ever!*

Yes, the research microscope is an everyday production tool with MILFORD . . . used constantly as a part of our exclusive heat-treating process to guarantee the consistent uniform hardness of every tooth.

Together with modern M-2 high speed steel . . . the MILFORD "know-how" in milling and setting . . . and the most exacting and rigid inspection possible . . . this positive laboratory controlled method of heat treatment is producing the finest power blades we've ever made.

And they're establishing new cutting records everywhere. Fully up to our own extensive tests which show 30% greater endurance . . . 28% more straight cuts . . . 5% faster.

You owe it to yourself to try this greatly improved blade on your own machines!

**Order from your Industrial Distributor. He is always ready to serve your needs for all industrial supplies, including MILFORD hack saw and band saw blades.**

**MILFORD** PROFILE AND BAND SAW BLADES REZISTOR AND DUPLEX HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.

*Saw Specialists Exclusively for over 70 Years*

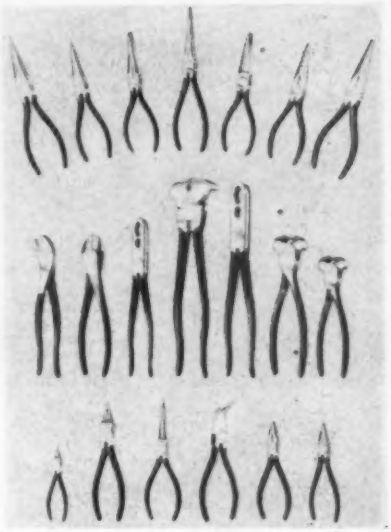
NEW HAVEN 5, CONNECTICUT, U. S. A.


(*Continued from page* 204)

ized lead oxide composed of microscopic particles of uniform size and shape—and the extra plate area resulting from use of many ultra-thin plates, give the batteries their exceptional cold weather capacity.

Willard's long established research on the cold weather battery problem was intensified in 1941 at the request of the government. By late 1942, the company was actually producing batteries for use by the armed forces in extremely cold climates. The new types have approximately double the cranking efficiency of former types at —40° F. and they crank engines at —65° F., an impossible feat with previous types. To mass-produce the batteries, Willard perfected a number of extraordinary manufacturing processes.

## WILLIAMS ADDS 15 NEW PATTERNS TO PLIER LINE



With the addition of 15 new plier patterns, J. H. Williams & Co. has rounded out its plier line to cover the most popular sizes and styles used in industrial and automotive work. The additional styles include end cutting nippers, long and short chain nose, long and bend needle-nose, duck bills, round nose, gas and burner, fence and staple, puller and battery pliers. All jaw faces are brightly polished. Each pair of pliers is packed in individual box.

## TOOL CRIB CONTROL AND CUTTING TOOL COSTS

"How Tool Costs Were Cut 12 Ways in 20 Plants" is the title of booklet issued by the Industrial Division of The McCaskey Register Co., Alliance, Ohio, based on written reports of savings from a score of plants. The booklet tells how the McCaskey cuts inventories, obviates theft, prevents tool shortages, and saves time of employes, and provides check on breakage. Copy is available for the asking.

(*Please turn to page* 208)

REYNOLDS ALUMINUM

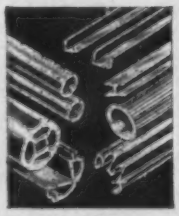
# FAST SERVICE FROM DISTRIBUTOR WAREHOUSE STOCKS

Aluminum in less-than-carload lots is available with speed and the many helpful services of your nearby metal distributor listed below. Reynolds technicians, in offices across the country, work closely with distributors on special problems. Together they can bring all the advantages of Reynolds *Lifetime* Aluminum to your products and production, just as they are helping metal fabricators everywhere in their conversion to this modern, lightweight metal.

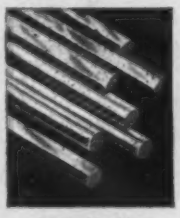
Consider aluminum . . . consult your Reynolds Distributor.



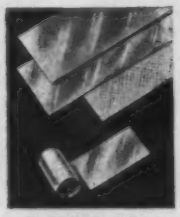
Wire, Rod and Bar



Extrusions Structurals



Screw Machine Stock



Coil, Sheet, Plate Plain & Embossed





**ALABAMA**
Arnold-Brown Metals & Supply Co., Birmingham 5
Southern States Iron Roofing Co., Birmingham

**CALIFORNIA**
American Brass & Copper Co., (Wire, rod, bar, structurals) Oakland 7
Brumley-Donaldson (Ingots only), Huntington Park (L.A.)
Richard G. Stern & Company, Los Angeles 46
Tay-Holbrook, Inc., San Francisco 1
Union Hardware & Metal Co., Los Angeles 54
United States Steel Supply Co., Los Angeles 54 and San Francisco 1
Western Metal Supply Company, San Diego 12

**COLORADO**
Marsh Steel Corporation, Colorado Springs and Denver 5

**FLORIDA**
Horne-Wilson, Inc., Jacksonville 6, Orlando, Miami 36 and Tampa 1
Southern States Iron Roofing Co., Orlando

**GEORGIA**
Southern States Iron Roofing Co., Atlanta and Savannah

**IDAHO**
Idaho Steel Products, Inc., Boise

**ILLINOIS**
United States Steel Supply Co., Chicago 4
Benjamin Wolff & Company, Chicago 36

**INDIANA**
Brass & Copper Sales Co., Indianapolis 4

**KENTUCKY**
Southern States Iron Roofing Co., Louisville
Neill-LaVielle Supply Co., Louisville 2

**LOUISIANA**
Southern States Iron Roofing Co., New Orleans

**MARYLAND**
Clendenin Bros., Inc., (Wire, rod, bar, structurals) Baltimore 2
Lyon, Conklin & Co., Inc., Baltimore 30
United States Steel Supply Co., Baltimore

**MASSACHUSETTS**
Bay State Refining Co., (Ingots only) Chicopee Falls
Arthur C. Harvey Company, Boston 34
Pratt & Inman, (Wire, rod, bar, structurals) Worcester 8

**MICHIGAN**
Kaslo Steel Corporation, Detroit 9

**MINNESOTA**
Newell T. Miner Company, St. Paul 4

**MISSOURI**
Brass & Copper Sales Co., Kansas City 6 and St. Louis 3
Marsh Steel Corporation, N. Kansas City

**NEW JERSEY**
Edgcomb Steel Corporation, Hillside

**NEW YORK**
Beals McCarthy & Rogers, Inc., Buffalo 5
Edgcomb Steel Corporation, Hillside, N.J.

**NORTH CAROLINA**
Southern States Iron Roofing Co., Raleigh

**OHIO**
Hamilton Steel Company, Cleveland 8
Summer & Company, Columbus 8

**OREGON**
American Steel Warehouse Co., Portland 14

**PENNSYLVANIA**
Colonial Smelting & Refining Co., (Ingots only) Columbia
Levinson Steel Sales Company, Pittsburgh 19
Potts-Farrington Company, Philadelphia 7

**SOUTH CAROLINA**
Southern States Iron Roofing Co., Columbia

**TENNESSEE**
Southern States Iron Roofing Co., Nashville and Memphis

**TEXAS**
Marsh Steel Corporation, Dallas 10
Moncrief-Lenoir Manufacturing Co., Dallas 1 and Houston 1

**UTAH**
Salt Lake Hardware Co., Salt Lake City 9

**VIRGINIA**
Southern States Iron Roofing Co., Richmond

**WASHINGTON**
Seattle Steel Company, Seattle 4

**WISCONSIN**
Benjamin Wolff & Co., Milwaukee 3

REYNOLDS METALS

## DISTRIBUTORS of REYNOLDS ALUMINUM

**REYNOLDS METALS COMPANY • LOUISVILLE 1, KENTUCKY**

CONSIDER ALUMINUM . . . CONSULT REYNOLDS . . . THE COMPLETE ALUMINUM SERVICE

OFFICES IN PRINCIPAL CITIES • LISTED UNDER "ALUMINUM" IN YOUR CLASSIFIED PHONE BOOK

PLEASING, CLEAN-CUT APPEARANCE, SERVICEABLE, *READY-MADE*...



HALLOWELL

Fig. 732
Pat'd Pats. Pend.
Drawer is extra.

# WORK BENCHES OF STEEL

These *ready-made*, serviceable "HALLOWELL" Work Benches of Steel have a pleasing, clean-cut appearance, and are ideal equipment for modernizing *your* shop. They are made in an assortment of standardized heights, widths and lengths, and the "HALLOWELL" Units can be used either individually or bolted together to form a continuous work bench of any desired length — this flexibility is a great money-saving feature *not practicable* with "nailed-together" wooden benches. "HALLOWELL" Benches have smooth, long-wearing steel tops; are also available with heavy, high-grade laminated wood tops . . . or steel tops covered with "Tempered Presdwood". The "HALLOWELL" — rigid as a rock — *does not* require costly bolting to the floor.

*Other "HALLOWELL" Products include:*
"HALLOWELL" Foreman's Desks of Steel; "HALLOWELL" Tool Stands of Steel, with or without casters; "HALLOWELL" Stools and Chairs of Steel.

SPS STANDARD PRESSED STEEL CO.
BOX 590, JENKINTOWN, PENNSYLVANIA

*"Serving Industry continuously since 1903 through Industrial Distributors"*



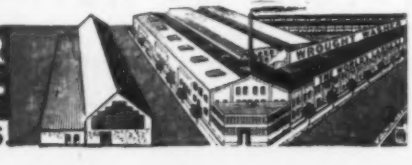

## *The* SYMBOL of QUALITY for 62 YEARS

**WASHERS . . . Standard and Special, Every Type, Material, Purpose, Finish . . . STAMPINGS of every Description . . . Blanking, Forming, Drawing, Extruding.**

**Your most dependable source of supply — the world's largest manufacturer of Washers, serving Industry since 1887. Over 22,000 sets of Dies.**

***Submit your blueprints and quantity requirements for estimates.***

WROUGHT WASHER MANUFACTURING CO.
*The World's Largest Producer of Washers*
2113 S. BAY ST., MILWAUKEE 7, WIS.



### MOVING PICTURE COVERS CARTON OUTSIDE STAPLING MACHINE

Announcement is made by the International Staple & Machine Company, Havertown, Penna., of the availability of a twenty-minute, black and white sound film, showing the use of its Retractable Anvil Staple Machine for closing filled fibre or corrugated cartons from the outside. The movie shows the retractable anvil principle at close range and actual on-the-spot pictures of the machine in action of shipping rooms. Arrangements for showing may be made with the company's distributors or by writing direct to the factory.

### BOOKLET PRESENTS FACTS ABOUT PRE-LUBRICATED BEARINGS

A new booklet available from Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa., presents facts about the pre-lubricated bearings used in Life-Line motors. Starting with a discussion of why prelubricated bearings are possible, the booklet includes sections devoted to "Desirable Qualities of Grease", "Tests to Prove the Adequacy of Grease," and "Tests to Prove the Seal's Effectiveness." Several case-history-type examples are included.

### NEW RUBBER FOR ARCTIC USE

Discovery of a synthetic rubber polymer that will bounce instead of shatter at 75 degrees below zero (F.) has been announced by The Firestone Tire and Rubber Company.

"The amazing resiliency of this new Arctic rubber may enable engineers to solve innumerable problems in the operation of machinery, motor vehicles and aircraft at sub-zero Arctic temperatures," according to Raymond C. Firestone, Vice President in charge of research and development of the Firestone Company.

Rubber tires, hose, gaskets and belting in the past have frozen as hard as rock at temperatures below minus 60 degrees F.

In comparisons with GR-S and natural rubber, the new Arctic polymer has shown two outstanding advantages in tires tested under extreme sub-zero laboratory conditions. Tires don't stiffen so much that they develop permanent flat spots when parked and treads don't harden and chip out.

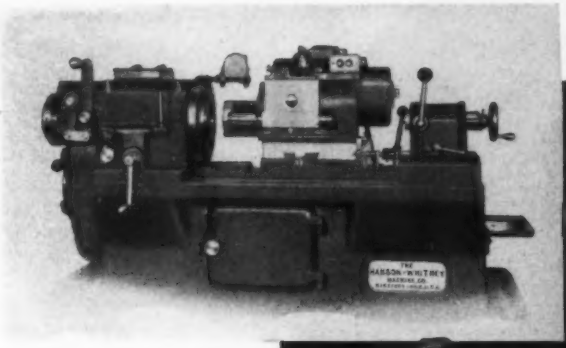
During Far North military maneuvers in 1946, vehicles frequently were immobilized because the flattened part of the tire on the ground would take a permanent set when parked overnight. In the morning such tire wouldn't roll until they were thawed out and made round again.

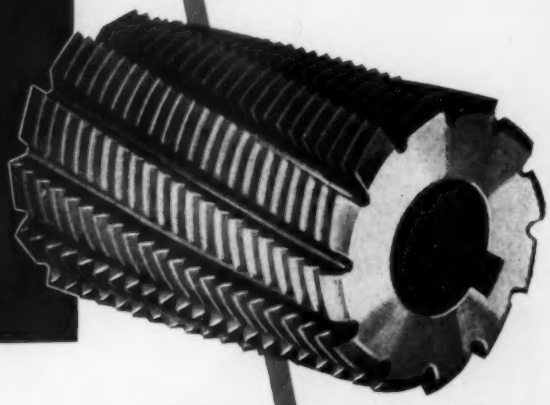
Test results indicate that tires made of the new Firestone Arctic polymer will be resilient enough to remain serviceable at temperatures as low as 75 degrees below zero (F.).

(*Please turn to page* 210)

# STOP COSTLY SPOILAGE

## use Hanson-Whitney multiple thread Milling Cutters

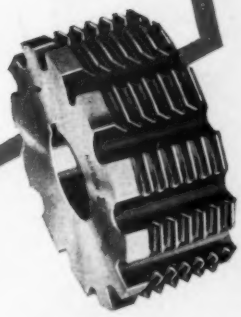




Shell Type Cutter for external thread milling, Thread Rolling Dies, etc.



Taper Shank Cutter for internal thread milling.



Shell Type Cutter for short external threads.

H-W Ground Multiple Thread Milling Cutters are finished all over, AFTER hardening, to the closest of limits.

Angle of thread, relief and spacing of threads are very accurately controlled. Teeth can be spaced minus or plus to compensate for hardening variations in the product... a valuable feature on Cutters for Milling Thread Rolling Dies, as teeth can be spaced minus, to compensate for Helix Angle of thread.

Used in combination with H-W Thread Millers, H-W Cutters will give you 100% perfect threads on a production basis... without COSTLY SPOILAGE.

If you're having threading problems... here's the solution.

HANSON-WHITNEY MACHINE CO., HARTFORD 2, CONN.

Division of Whitney-Hanson Industries, Inc.

For practical recommendations submit your problems to Hanson-Whitney engineers.

**Hanson Whitney**

*PIONEERS OF FINISHED TAPS*

4HW49

POWER
PROTECTION
TOUGHNESS
DURABILITY
LONG LIFE
BALANCE




*C/R Hammers have malleable iron heads with replaceable coiled rawhide faces.*

**RAWHIDE** is tops for "soft" mallets and hammers. And you can't beat *Chicago* Rawhide. Tightly coiled, specially treated C/R surfaces won't split, crumble or mushroom. They absorb shock, deliver powerful blows, protect delicate surfaces, and stand up under tough use. Always ask for *Chicago* Rawhide.

CHICAGO Rawhide MFG. CO.

1203 ELSTON AVENUE CHICAGO 22, ILLINOIS

*Other C/R maintenance products are: round, flat and twist belting; belt pins and belt lacings gears, pinions and gear blanks; aprons and hand leathers; hydraulic packings.*

(*Continued from page* 208)

At temperatures of minus 61 to 63 degrees, GR-S and natural tread rubbers become brittle, allowing pieces to chip out. Arctic polymer rubber treads in tests at temperatures below minus 75 degrees retain their resiliency and do not chip or break away.

## WORKSAVER HANDLES CYLINDRICAL CONTAINERS WITHOUT PALLETS

The Yale & Towne Manufacturing Company, Philadelphia Division, announces a new Worksaver development which equips the tilting fork model of the battery-powered hand-truck line with hydraulically operated fingers which grasp and pick up drums, cylindrical cardboard containers, and kegs *without the use of pallets or skids.* The truck tiers from 1 to 6 cylindrical containers 2, 3 and 4 layers deep. The fingers grasp the load from above and suspend it for handling, rather than support it from below.



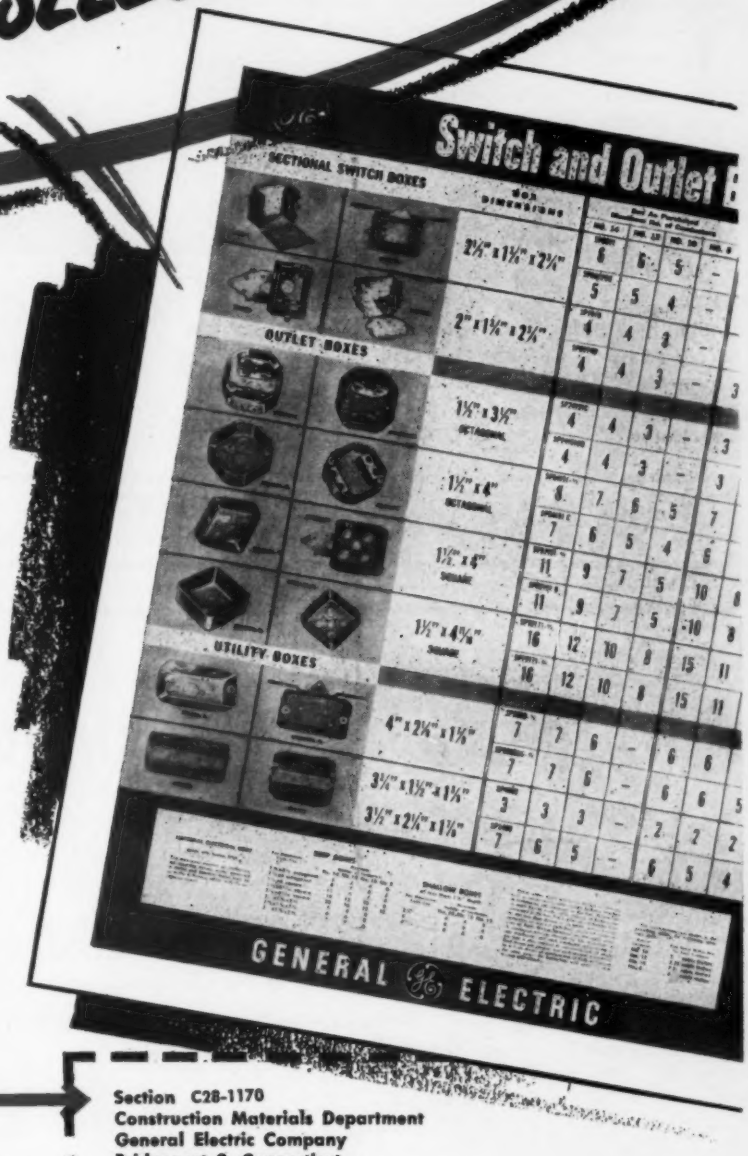

**The fingers grasp the load and suspend it for handling.**

The truck is particularly advantageous when loading and unloading freight cars and street trucks because containers do not have to be manually placed on or taken off pallets or skids for handling. The truck eliminates pallet inventories which may tie up thousands of dollars where large quantities of such commodities as oils, batching ingredients, chemical powders, nails, screws and bolts must be stored either for shipment or future use.

The battery powered hand truck weighs 3845 lb. Its overall height is 83". Outside dimensions are 32⅝" x 77⅛", excluding the grasping mechanism. The truck travels three miles per hour with no load, two miles per hour under full load. Truck lifts 15 feet per minute with 3,000 lb. load. Operation of the hydraulic fingers is controlled by levers located at the front of the truck. Lifting and lowering are also controlled from levers at the front of the truck. Forward and reverse speeds are controlled from the handle of the truck. When the steering handle is in either the vertical or horizontal position the truck brake is automatically applied to prevent accidental movement.

(*Please turn to page* 212)

# THIS NEW GUIDE MAKES BOX SELECTION EASY!




Now, to make your specification job easy and sure, General Electric offers free a new switch and outlet box chart. A quick glance tells you the outlet, switch or utility box that's right for your wiring job.

This new chart gives number of conductors, by wire size, permitted by Code regulations for various sized boxes. Also, as a handy guide when reading or laying out building plans or wiring diagrams, we've included that section of the National Electrical Code covering box sizes.

***To get your free copy, see your G-E Construction Materials distributor, or fill in and mail the coupon below.***

And, don't forget, your General Electric Construction Materials distributor carries a really complete line of conduit products. On your next order, why not try the time-saving, "one-stop, one-package" service he can offer? Because he carries the complete General Electric Conduit line you can order *every* item you need from him. It's the kind of service busy contractors need to help stretch scarce working hours.

**Section C28-1170**
**Construction Materials Department**
**General Electric Company**
**Bridgeport 2, Connecticut**

Please send me a free copy of your new Switch and Outlet Box Chart.

Name_____

Company_____

Street_____

City_____ Zone_____ State_____

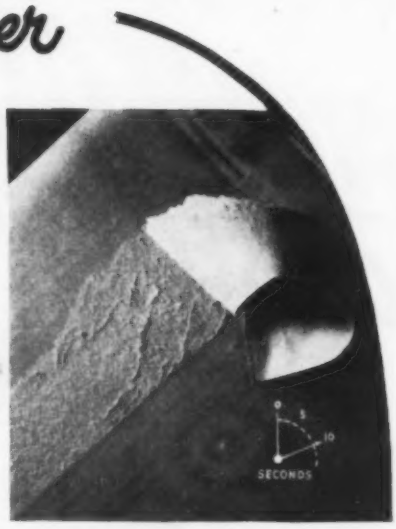
**GENERAL ELECTRIC**

# Troubled by Gum Tape FAILURES? Here's the Answer

After a test of Kano Tak the engineers of a large automotive company reported "The initial seizure of gummed tape adhesive was advanced approximately five seconds. Adhesion was more uniform with air pockets virtually eliminated. Kano Tak proved to be the most efficient glue moistener tested so far."

Then another user wrote "Gummed tape sealing is speeded up remarkably. In fact, after ten seconds it is impossible to remove the tape without tearing the hide off the carton."

We tried this and here is a picture of what happened.




At a petty cash expense you can speed up sealing and eliminate damage claims due to gummed tape failures. One gallon of Tak makes ten gallons of solution for sealing machines.

## Try Kano TAK at our risk!

It will make good in your plant under your working conditions or the unused porportion may be returned for full credit.
Gallon, $2.90; 5 gals. $12.90, f.o.b. Chicago

**KANO** LABORATORIES
83 E. Wacker, Chicago 1, Ill.

*Make Sure of PERFORMANCE—*

## WATCH THE "LITTLE" THINGS!



**SPRINGS** of only the best quality should go into products that must give serious service. Product failure (always in the user's hands!) destroys good will it took years and dollars to acquire, makes getting new business uphill work. One faulty spring can nullify any price-bought "savings" a thousad times over. Let our egineers help you to buy your next lot of springs.



**SCREW MACHINE PRODUCTS** — The above remarks on buying springs applies equally well to the purchase of screws, nuts, turnings, pins, etc., made on screw machines. Here, too, our engineers will gladly analyze the "end use" of your product.

**PECK**

**SPRINGS & SCREW MACHINE PRODUCTS**
**THE PECK SPRING COMPANY** 40 Wells St., Plainville, Conn.


### DENNISON MULTIPRESS SHOWN IN SOUND FILMS

Announcement is made by the Dennison Engineering Company, Columbus 16, Ohio, of the availability of a new sound film showing the Dennison multipress in action in various plants. The title of the film is "Multipress Goes to Hollywood," and the showing time is 30 minutes. The film reveals the cost savings and productions in many industries made possible by the use of the press. Operations include broaching, trimming, forming, marking, crimping, assembling, staking and others.

### SPRING ASSORTMENTS OFFERED PECK SPRING COMPANY

Three new types of spring assortments, which contain oil tempered steel springs that can be made to fit most any application relative to product engineering, designing and maintenance, are being marketed by The Peck Spring Co., Plainville, Conn. The springs are packed in a heavy



**Assortment No. 2. It contains about 250 extension and compression springs up to 11½" long**

cardboard container, and range in size from 1" to 11½" in length, and up to ½" in diameter packed in separate sections. A wide variety of different length springs can be made from each assortment. Assortment No. 1 includes approximately 100 springs in brass and steel of the extension and compression varieties; No. 2 contains about 250 extension and compression springs, packed in separate sections, ranging in length from 1 to 11½" and up to ½" diameter; No. 2-A consists of an assortment of tempered steel extension springs only, ranging from 1" to 11½" in length and up to ½" diameter.

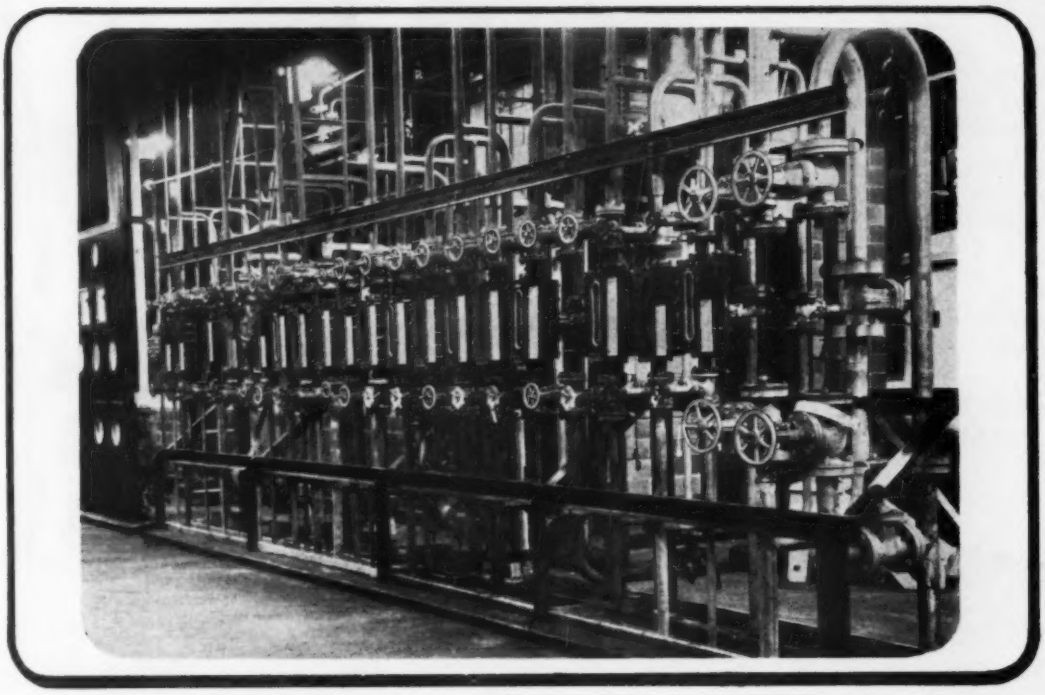
### MINERAL WOOL INSULATION COMMERCIAL STANDARD

Mineral Wool Insulation for Heated Industrial Equipment, is the subject of Commercial Standard CS117-49, recently published by the Commodity Standards Division, National Bureau of Standards, Department of Commerce, Washington, D. C. Copies of the standard are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., at 15¢ per copy.

(*Please turn to page* 216)

# ALOYCO STAINLESS STEEL VALVES

## recover spent acetic acid for *Hercules*

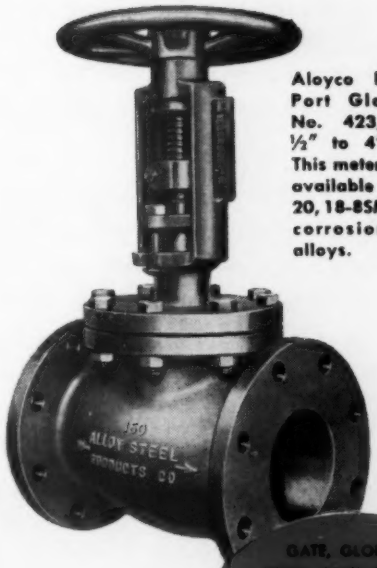


The photograph of the panel-board above was taken in the Parlin, New Jersey, Plant of Hercules Powder Company. It is part of their equipment for production of cellulose acetate. Because shutdowns for valve replacement are costly, it would be downright extravagant to use any but the best corrosion-resistant valves here.

That is why E. B. Badger & Sons Company, engineers and constructors, installed Aloyco Stainless Steel Valves in the first place.

The utility of Aloyco Corrosion-Resistant Valves is more than skin-deep. These Valves are not merely stainless-trimmed, they are made of solid alloy throughout, except for handwheels and yoke bushings. And they are made of the *one* right alloy for the particular job on which each is used. Aloyco metallurgical experience makes that assurance doubly sure.

Just name your corrosive—there's an Aloyco Valve "made to order" for it.




**Aloyco Flanged V-Port Globe Valve No. 423, 150 lb., ½" to 4" inclusive. This metering valve is available in Aloyco 20, 18-8SMo and other corrosion-resistant alloys.**

GATE, GLOBE, Y, CHECK, TANK, SAMPLING AND V-PORT VALVES

SCREWED AND FLANGED FITTINGS

## ALLOY STEEL PRODUCTS CO., Inc.

**1403 W. ELIZABETH AVE., LINDEN, NEW JERSEY**

SALES OFFICES: ATLANTA; CHICAGO; HOUSTON; LOS ANGELES; NEW YORK CITY; PITTSBURGH; WILMINGTON, DEL.


*Want Additional Product Information? See Page 19.*

# NEW ADDITION



**CROCKER-WHEELER MADE MOTOR NEWS THEN . . .**

**1894** . . . *the first electrified printing plant in the world* is installed (for the New York Life Insurance Company) by Crocker-Wheeler. Soon C-W motors were in use in the Government Printing Office in Washington, the Bureau of Printing and Engraving, the United States mint in Philadelphia. This early Crocker-Wheeler driven machinery was to be the forerunner of the modern high speed printing press.

**and CROCKER-WHEELER IS MAKING MOTOR NEWS** *today*—

# C-W WOUND-ROTOR MOTORS

From 1 to 2000 hp.

***Now Crocker-Wheeler brings you a streamlined Protected-Type WOUND-ROTOR Motor with all the up-to-the-minute advantages of the popular C-W Protected-Type Squirrel-Cage Induction Motors.***

Users of C-W Protected-Type Squirrel-Cage Motors know well the advantages of Crocker-Wheeler design . . . and the many mechanical modifications which make these standard motors so versatile. Now the *same* advantages are available in wound-rotor motors.

For printing, conveying, ventilation and other services that require smooth acceleration, high starting torque with low starting current, ability to start and stop or reverse frequently, or variable speed, these new C-W motors will provide unexcelled performance.

Sizes from 1 to 2000 h.p., and an exceptionally wide choice of mechanical modifications, answer practically all application problems. You may have splash-proof and totally-enclosed non-ventilated, as well as the protected-type design. Choose from vertical, NEMA D flange or C face mountings and all standard NEMA floor, or ceiling mounting assemblies. Special windings are available for crane and hoist duty.

The excellence and motor know-how built into C-W Wound-Rotor Motors is clearly explained in the new Bulletin SL-330-1. Mail coupon for your copy. *Now.*

IF CROCKER-WHEELER BUILDS IT, IT'S A BETTER BUILT MACHINE



Protected-Type Induction Motors Vertical or Horizontal



Totally-enclosed, fan-cooled Motors



A-C Generators and High Speed Synchronous Motors

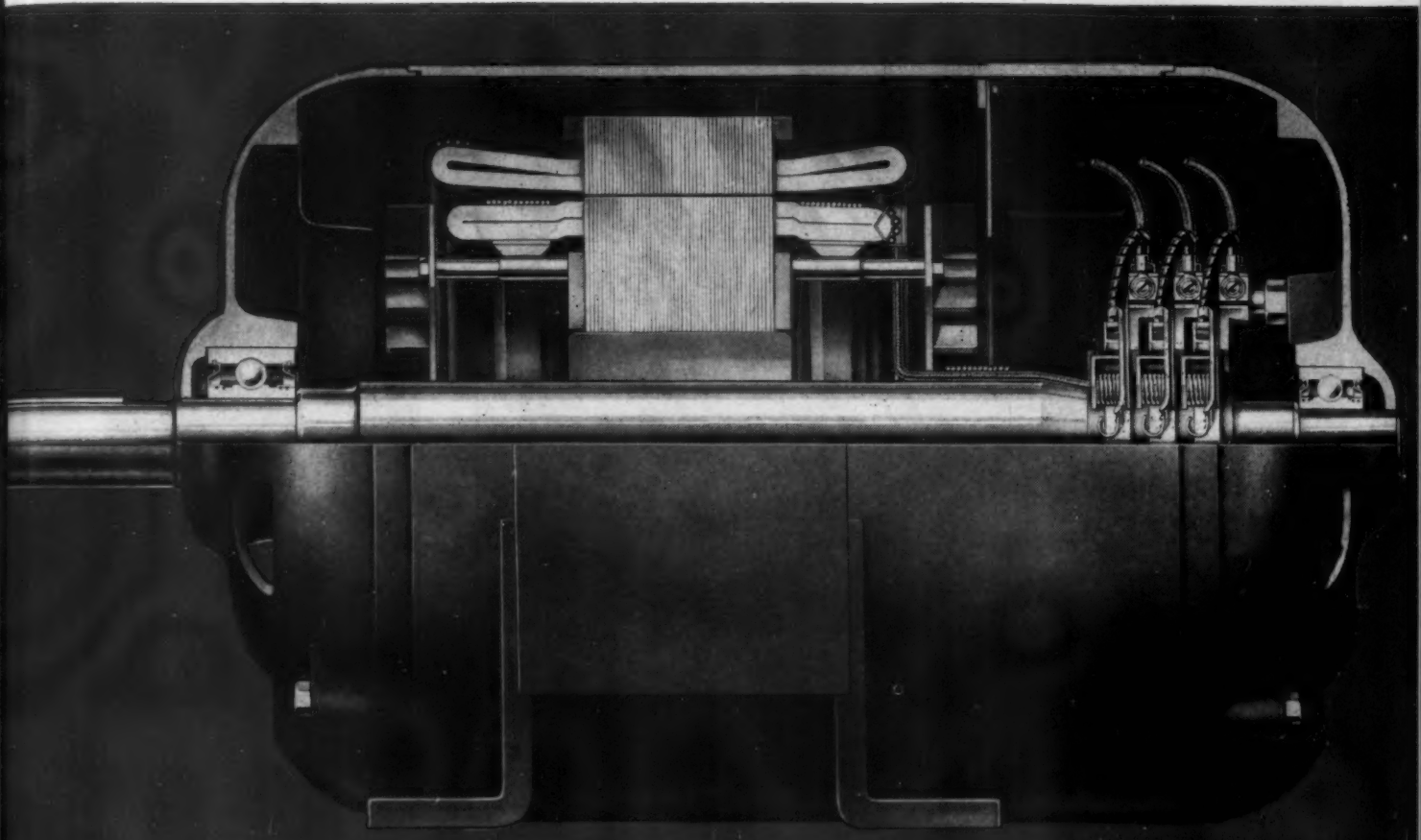


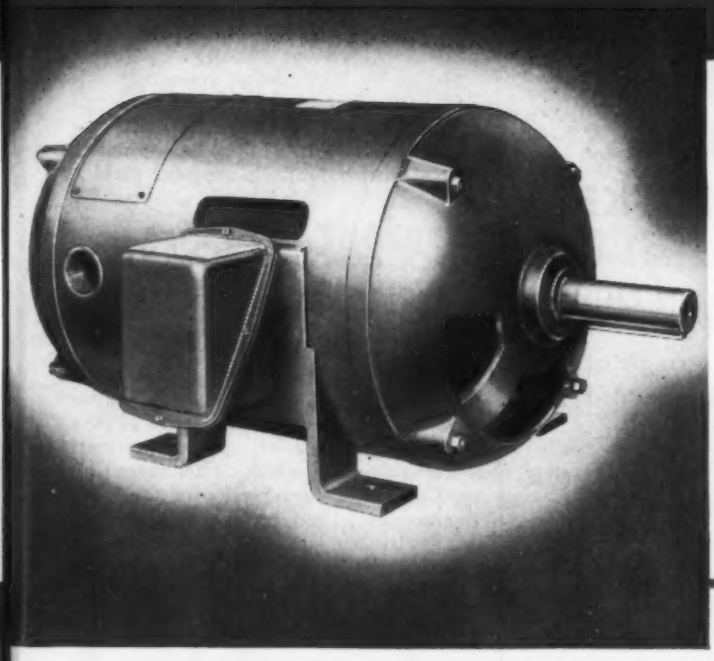
Large D-C Motors and Generators



Turbogenerators

# to Protected-Type line----





## Better Built because---

Frames and endshields dripproof—keeps dripping liquids and falling chips out of windings.

Louvered openings on both sides of frame for maximum cooling, with effective protection.

Air guides distribute cooling air effectively.

Stator and rotor coils of vinylacetal insulated wire, protected by thoroughly-baked thermosetting varnish for maximum rigidity and long-lasting protection against electrical failure.

Slip rings cast of special composition bronze for long life, mounted on steel hub, insulated from hub by mica sleeve.

NEMA frames 364-505 have heavy rolled steel frame for strength. Sturdy welded feet.

*Full details of the many other fine points of these motors are included in the new Bulletin now available. Send coupon.*




**CROCKER WHEELER**

**ELECTRIC MANUFACTURING COMPANY, AMPERE 3, N. J.**

A Division of Elliott Company

**BRANCH OFFICES:**

**Atlanta, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Kansas City, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Newark, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, San Francisco, Seattle, Tulsa, Washington, Wilmington. Representatives in principal cities.**

Crocker-Wheeler Electric Mfg. Co.
Ampere 3, N. J.

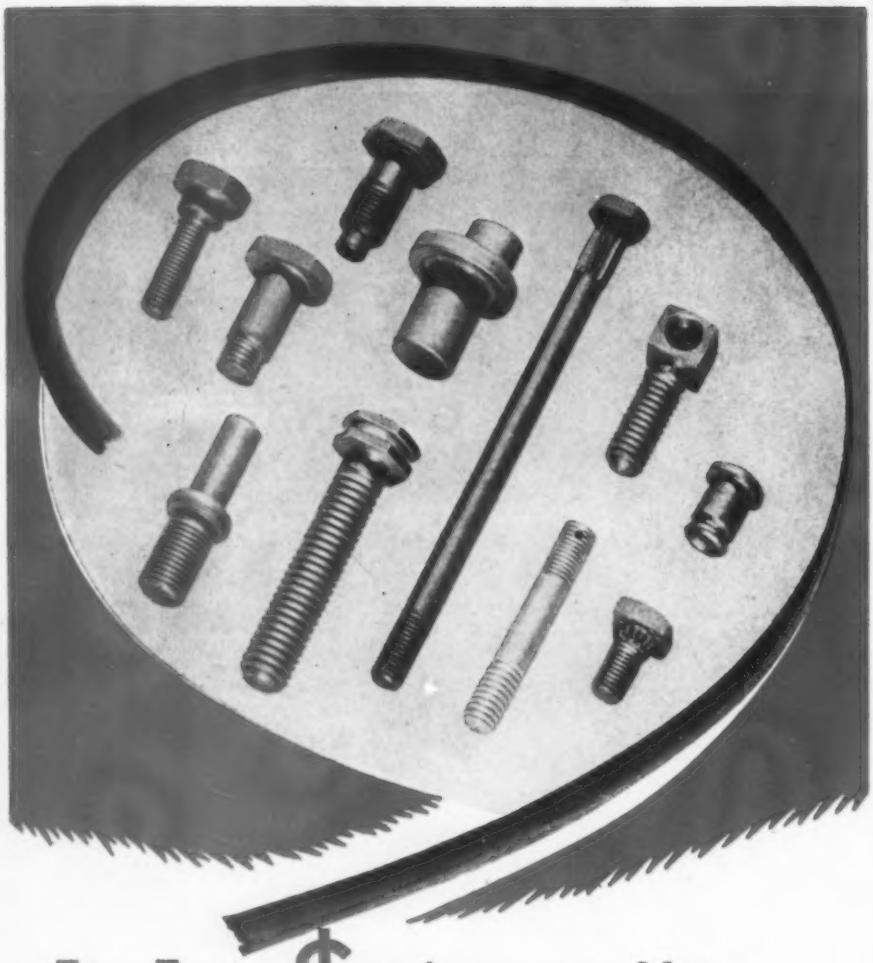
*Please send new Bulletin SL-330-1, describing Crocker-Wheeler Protected-Type Wound-Rotor Motors.* P-1149

Name.....

Title or Function.....

Company.....

Address.....



For Extra $avings on Your

Special Threaded Parts

use the KAUFMAN PROCESS

and CLEVELAND *Top Quality* SERVICE

You may be surprised to find how well and how economically your special fasteners and parts can be produced by the Kaufman Process. A cold forging process, it enables us to single or double extrude your parts, giving them added strength for their important job. A faster process, it enables us to give you prompt delivery, once your schedules are set. It pays you to send your blue prints and specifications for estimate.

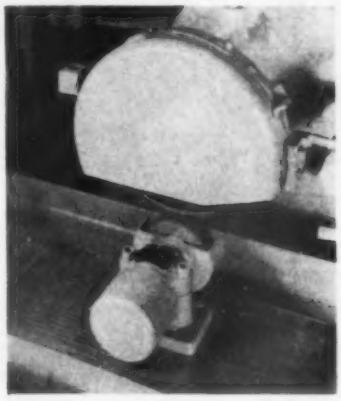
THE CLEVELAND CAP SCREW COMPANY
2917 East 79th Street • Cleveland 4, Ohio

CLEVELAND *Top Quality* FASTENERS

ORIGINATORS OF THE
KAUFMAN DOUBLE EXTRUSION PROCESS
Specialists for more than 30 years in
CAP SCREWS, SET SCREWS, MILLED STUDS
Ask your jobber for Cleveland Fasteners

## DEVICE FOR TRUING DIAMOND ABRASIVE WHEELS

A new device for truing diamond abrasive wheels, known as the Norton Brake-Controlled Truing Device, has just been released for sale by the Norton Company, Worcester, Mass. The device is small and compact, and complete to set up and operate. It is a self-contained unit that is driven by the diamond wheel to be trued, rather than by a separate motor, thus eliminating extra wires and



**The device for truing diamond wheels is small, compact and easy to set up.**

motor upkeep. It also obviates the need for reducing the speed of the diamond wheel during the truing cycle. It is designed for truing diamond wheels of all bond types with the exception of resinoid bonded diamond wheels finer than 220 grit. The new tool works with great rapidity. An example is cited of an 18" metal bonded diamond cut-off wheel, such as used in the stone industry, which was found to be .015" out of round. It was made to run true in one and one-half minutes. Equally outstanding results are said to have been obtained on vitrified bonded diamond wheels used for carbide grinding.

## RCA ANNOUNCES NEW ALL-WEATHER RADIO COMMUNICATION SYSTEM

Commercial microwave relay equipment, making possible a system of high-frequency point-to-point radio communications for such diverse industries as pipe lines, gas companies, power utilities, trucking companies, etc., is announced by the Communications Section of the RCA Engineering Products Dept., Camden, N. J. In many cases, the equipment is expected to replace existing privately owned wire or carrier current systems, and to meet the need for original installations to reach locations heretofore inaccessible to wire systems or where the cost of such systems has been prohibitive. Ordinary poles and wires are replaced by a chain of elevated radio relay stations spaced approximately 35 miles apart. Equipment is relatively simple and easy to install and uses conventional tubes which may be purchased at any first class radio store. Power requirements are 100 watts, 115 volts, 60 cycles.

(*Please turn to page* 218)




## For those tough jobs...3 Chase Special Alloy Rods

### *. . . made to see you through*

THESE three special rod alloys were specifically developed to meet certain unusual needs of industry. They were designed to help solve manufacturing problems that *you* may encounter. They typify the kind of service Chase is prepared to offer you.

In addition to these special alloys, Chase *regularly produces*—in rod—10 non-leaded alloys, 7 leaded alloys of the highest quality . . . making it the simplest thing in the world to obtain one or more rod alloys that will do exactly the job you require. Start now to draw upon this wealth of production and research facilities. Call Chase today!

# Chase

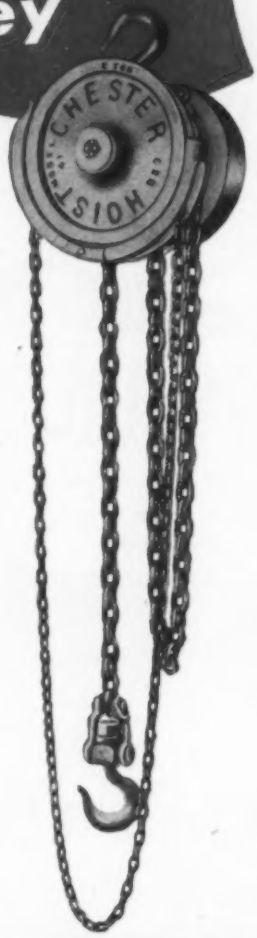
*the Nation's Headquarters for*
**BRASS & COPPER**

WATERBURY 20 CONNECTICUT — SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK . . . *handiest way to buy brass*

ALBANY† ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DALLAS DETROIT HOUSTON† INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† ST. LOUIS SAN FRANCISCO SEATTLE WATERBURY (†Sales Office Only)

# CHESTER HOISTS
## Save Money




For rapid lifting and lowering with utmost economy, specify *Chester Spur Geared Chain Hoists.*

Expertly designed and built by the Hoist Division of The National Screw & Manufacturing Company, they are strong, safe and dependable. *Timken Bearings* reduce friction on all working parts, insuring smooth operation and long life. Retaining brake holds the load at any position.

Chester Hoists are furnished in many types, such as Extended Hand Wheel, Twin Hook and close headroom types, e.g., Army, Clevis Connected, etc. Sizes from ¼ ton to 25 tons.



**CHESTER DIFFERENTIAL HOISTS** are designed for use where occasional lifting is required at a minimum expense. Made in ¼, ½, 1 and 1½-ton sizes, these lower priced hoists are light and portable, hold their load at any point and will not self-lower.



**CHESTER TROLLEYS** are furnished in either plain or geared type, with either Timken Roller or plain bearings. They are well balanced and give excellent service.

*Send Coupon or Write for Our New Catalog*

## THE NATIONAL SCREW & MFG. CO.

**Chester Hoist Division • Lisbon, Ohio**

The National Screw & Mfg. Co., Chester Hoist Div., Lisbon, Ohio

Please send copy of your new catalog on Chester Hoists and Trolleys.

Name_____

Company_____

Address_____

P-5-9


### TUBING TO OPERATE AT 10,300 PSI AND 1000 F.

Tubing which will withstand the unusual pressure of 10,300 psi at 1000 F. is included in piping system produced by The Babcock & Wilcox Tube Co., Beaver Falls, Pa., for the coal-to-oil demonstration plants recently opened by the U. S. Bureau of Mines at Louisana, Mo. The tubing included sizes from one and 1/32 inches to six and ⅝ inches outside diameter, and .145 inches to 1.169 inches in wall thicknesses. It included hot finished or cold drawn tubing in low carbon AISI 1040, AISI 4130, and B&W Croyloys 5, 9M, and 16-13-3 grades.

### NEW TYPE CORROSION-RESISTANT RESIN COATING

A new type of coating has been developed in the laboratories of the Brooklyn Polytech Institute, in conjunction with the Carboline Co., 7603 Forsythe Road, St. Louis, Mo., research program. It is made for application at room temperature, requires no mixing, and is flexible when dry. Bonding the finished coating over a ⅜" radius bar at —20° F. does not harm it. Chief advantages of the new coating over polyvinyl chloride and chlorinated rubber coatings are listed as follows:

Resistance to acids of higher concentrations. Resistance to higher liquid temperatures (180-200° F.) Resistance to such solvents as the alcohols and straight chain chlorinated and aromatic hydrocarbons.

The new material is known as the B resin solution. A limited quantity is available at no charge for experimental and test purposes. The coating is black and at the present time no method has been found to make it translucent or transparent. The solution adheres to wood, rubber, carbon and similar materials. For steel and concrete a primer is required and one has been developed which provides a good bond of the B coating to metal surfaces without sandblasting, and for use on surfaces that are slightly rusty or damp, but not oily.

### CHART OF HARDFACING RODS AND ELECTRODES

A new Selector and Comparison Chart of Hardfacing Rods and Electrodes has been released by the American Manganese Steel Division of the American Brake Shoe Company, 230 Park Ave., New York 17, N. Y. Known as bulletin CC-3, the chart lists each of Amsco's welding rods and electrodes and indicates the type of service for which each is designed. Metallurgical and physical descriptions of each rod are so arranged as to simplify selection by the user of the right rod for the right job. For comparison purposes, competitive rods which are the closest equivalents for the service noted, but not necessarily of the same composition or performance as Amsco rods, are also listed.

*Take Your Pick of these Allegheny Ludlum Booklets on*

# Stainless in Industry




WHY is stainless steel equipment becoming so increasingly important? WHAT are the specific applications? HOW about grade selection, corrosion resistance, forms available, and fabrication?

The booklets illustrated here (and others in preparation) give you the answers, based on industry-wide data and research by the recognized authority on fabrication and application . . . valuable to management and operating men, technologists, buyers, designers, fabricators, and distributors.

Size 8½" x 11", the "INDUSTRY BOOKLETS" together contain a number of specially written articles, many pertinent photographs, charts and tables. *Mail the coupon!*

**ALLEGHENY LUDLUM STEEL CORPORATION**

*The Nation's Leading Producer of Stainless Steels in All Forms*

AL

W&D 2729

**PITTSBURGH, PA. . . . Offices in Principal Cities**

Allegheny Metal is stocked by all Jos. T. Ryerson & Son, Inc., Warehouses

*Send Coupon - No Obligation*

Check the Industry Booklets you want, then attach this coupon to your letterhead and mail today to:

DEPT. P-81, ALLEGHENY LUDLUM STEEL CORP., Pittsburgh 22, Pa.

**(check all 7 if you wish)**

☐ Brewing ☐ Chemical ☐ Dairy ☐ Food Processing
☐ Laundry ☐ Meat ☐ Petroleum

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____




# bring your layouts to life: print on INTERNATIONAL TICONDEROGA OFFSET

**Here's the good report about Ticonderoga Offset:**

**Quality**—surface sized; tops for offset lithography or sheet-fed gravure.

**Reproduction**—clear, color-true; has a real affinity to ink.

**Economy**—especially dependable for long runs where uniformity is a prime need.

Specify Ticonderoga Offset, and get all 3 advantages in this No. 1 offset paper!

International Paper Company, 220 East 42nd Street, New York 17, New York




## INTERNATIONAL PAPERS

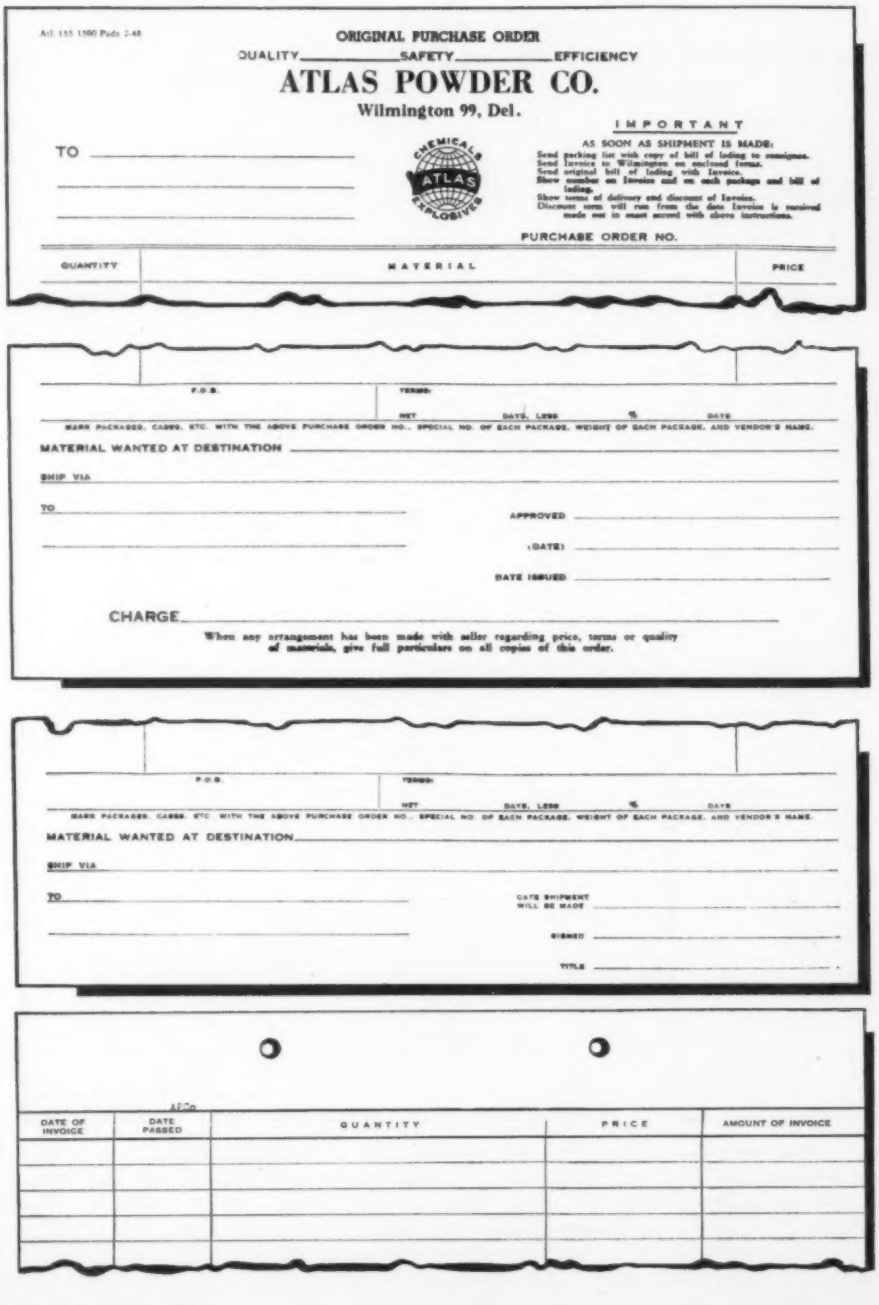
*for Printing and Converting*

PRODUCTION EXECUTIVE

# Office Equipment and Supplies

## Purchase Forms Used by Atlas Powder Company

Series of nine forms includes Purchase Order that eliminates making of requisitions, Alteration or change order form, invoice that accompanies Purchase order, and Credit Requisition and Invoice forms



ORIGINAL PURCHASE ORDER

QUALITY_____SAFETY_____EFFICIENCY

ATLAS POWDER CO.

Wilmington 99, Del.

IMPORTANT

AS SOON AS SHIPMENT IS MADE:

Send packing list with copy of bill of lading to consignee.
Send Invoice to Wilmington on enclosed forms.
Send original bill of lading with Invoice.
Show number on Invoice and on each package and bill of lading.
Show terms of delivery and discount of Invoice.
Discount term will run from the date Invoice is received made out in exact accord with above instructions.

TO _____

PURCHASE ORDER NO.

| QUANTITY | MATERIAL | PRICE |
|---|---|---|
| | | |

F.O.B. _____ TERMS: _____

NET _____ DAYS, LESS _____ % _____ DAYS

MARK PACKAGES, CASES, ETC. WITH THE ABOVE PURCHASE ORDER NO., SPECIAL NO. OF EACH PACKAGE, WEIGHT OF EACH PACKAGE, AND VENDOR'S NAME.

MATERIAL WANTED AT DESTINATION _____

SHIP VIA _____

TO _____

APPROVED _____

(DATE) _____

DATE ISSUED _____

CHARGE _____

When any arrangement has been made with seller regarding price, terms or quality of materials, give full particulars on all copies of this order.

F.O.B. _____ TERMS: _____

NET _____ DAYS, LESS _____ % _____ DAYS

MARK PACKAGES, CASES, ETC. WITH THE ABOVE PURCHASE ORDER NO., SPECIAL NO. OF EACH PACKAGE, WEIGHT OF EACH PACKAGE, AND VENDOR'S NAME.

MATERIAL WANTED AT DESTINATION _____

SHIP VIA _____

TO _____

DATE SHIPMENT WILL BE MADE _____

SIGNED _____

TITLE _____

| DATE OF INVOICE | DATE PASSED | QUANTITY | PRICE | AMOUNT OF INVOICE |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

*With the exception of the name of the vendor, the Purchase Order for standard plant materials is prepared in the plant and sent to the purchasing department, thus eliminating the customary step of forwarding a plant requisition. After quotations are obtained and other details completed, the purchasing department fills in the name of the vendor and order is signed.*

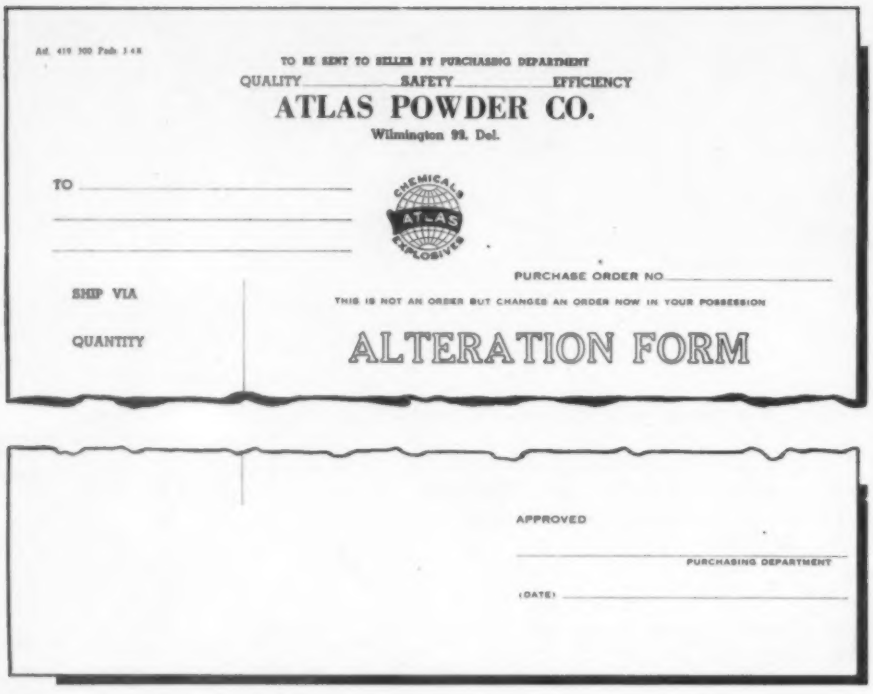
*Seven copies of the order are made for the following distribution: Original and acknowledgment copy (latter on blue paper stock) to vendor. These two copies are identical except that in upper right hand corner of acknowledgment copy, the standard instructions are replaced by special instructions to vendor to return copy immediately, and in the lower right hand corner the approval and date lines are replaced by "Date Shipment Will Be Made", "Signed", and "Title". The remaining copies include office copy with invoice data record on reverse, copy for accounting department, mill copy, and others.*

*Lower section of vendor acknowledgment copy.*

*Invoice record form on reverse of purchasing department copy of purchase order.*

(*Please turn to page 222*)

(*Continued from page 221*)



Ad. 419 300 Pads 3 4R

TO BE SENT TO SELLER BY PURCHASING DEPARTMENT

QUALITY SAFETY EFFICIENCY

**ATLAS POWDER CO.**

Wilmington 99, Del.

TO _____

_____

_____

PURCHASE ORDER NO _____

SHIP VIA

QUANTITY

THIS IS NOT AN ORDER BUT CHANGES AN ORDER NOW IN YOUR POSSESSION

**ALTERATION FORM**

APPROVED

_____

PURCHASING DEPARTMENT

(DATE) _____

*The Alteration Form, or change order is sent to supplier with duplicate acknowledgment copy to be returned by him. Copies of the Alteration Form are also sent to all other departments concerned.*

*Right: This is mimeographed form on letter-size sheet, that is used for expediting delivery of material by vendor.*



ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

OUR FILE:

Gentlemen:

Will you please let us know when you will ship ____

_____

on our requisition _____ which was sent you on _____

for shipment on _____ We are in need of this material and would ask that you do everything possible to make shipment.

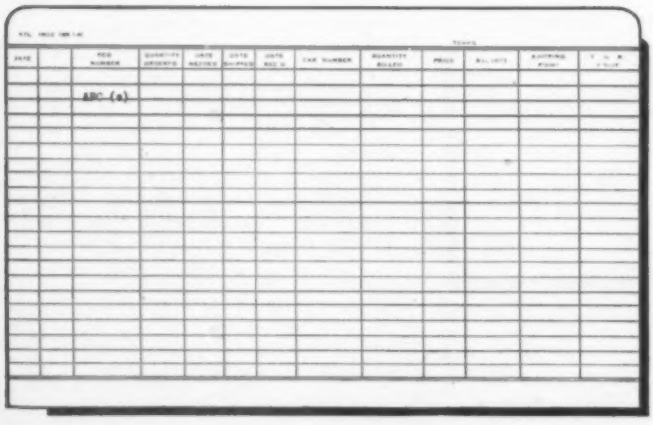
Very truly yours,

ATLAS POWDER COMPANY
PURCHASING DEPARTMENT

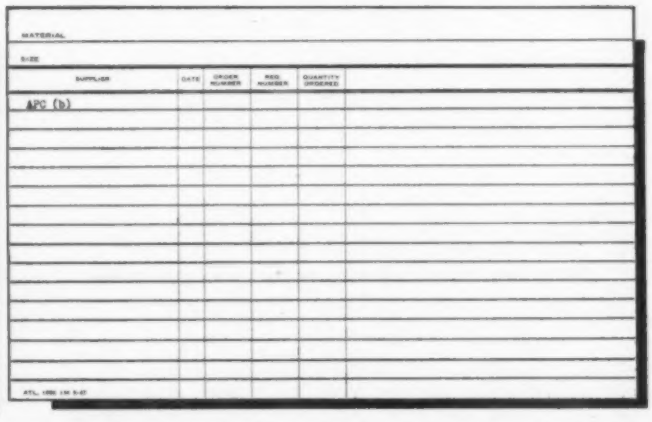
J. F. Muss

rer _____

MGP



| DATE | | REQ NUMBER | QUANTITY ORDERED | DATE RECEIVED | DATE SHIPPED | DATE REQ'D | CAR NUMBER | QUANTITY BILLED | PRICE | BILL NOTE | BILLING PROOF | V. O. K. & FILED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ABC (a) | | | | | | | | | | |



MATERIAL

SIZE

| SUPPLIER | DATE | ORDER NUMBER | REQ NUMBER | QUANTITY ORDERED |
|---|---|---|---|---|
| APC (b) | | | | |

*Purchase record forms: The form at the left is used for essential materials used in production, the using plant being indicated by symbol. Vendors name and address are shown at the bottom of the card which is kept in a loose-leaf file. The record data on this card is posted from purchase and alteration orders.*

*The card at the right is record form for non-production materials, that is, maintenance, repair and operating supplies. The cards are 8" x 5".*

(*Please turn to page 224*)

## YOUR BOSS NEEDS

# Your Help




Production needs closer control. Inventory needs watching. Sales expense needs checking. Competition's getting tougher and your management needs better records — faster. *That's where you come in!* Management looks to you for help in securing record-keeping equipment — and you can look to National for equipment that helps provide more accurate, more current records. Call your Stationer or write direct for our catalog "Business and Accounting Records." $1.00 a copy.

**For Example**



### Improve Speed and Accuracy with National's Bookkeeping Equipment

Get the facts today on these three National items that help save time and improve record-keeping accuracy:

1. National Machine Bookkeeping Equipment — aluminum posting trays on portable stands.
2. National Vertical Visible Trays and Forms — cut posting and reference time as much as 60%.
3. New heavy-duty Ringmaster* Visible Binders with or without new Rollomatic* tray and racks.

*Trade Mark Reg. U. S. Pat. Off.

NATIONAL

# Depend on National

***for Record-Keeping Items that Help You Provide***

# Accurate Records—*FAST*

**NATIONAL BLANK BOOK COMPANY, HOLYOKE, MASS. · New York · Chicago · Boston · San Francisco**

(Continued from page 222)



ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE

ORIGINAL

ATLAS ORDER NO.
CONSIGNED TO
SHIPPED VIA
CAR NO. AND INITIAL
ORIGINATING POINT
SHIPPING WEIGHT ... LBS.
PREPAID OR COLLECT

Information for which space is here provided must be supplied by shipper or invoice will be returned and discount calculated from date correct invoice is received.

TERMS ... DAYS NET ... PER CENT ... DAYS
DELIVERY F. O. B.

ATLAS VOUCHER NO.
DATE
BOUGHT OF
STREET AND NO.
CITY AND STATE

ORIGINAL BILL OF LADING MUST ACCOMPANY THIS INVOICE.
RECEIPTED EXPENSE BILL MUST ACCOMPANY ALL CHARGES FOR TRANSPORTATION

| DESCRIPTION | QUANTITY (SHOW UNIT) | PRICE PER UNIT | AMOUNT |
|---|---|---|---|
| | | | |

LESS CASH DISCOUNT

THE ABOVE MATERIAL WAS PURCHASED FOR USE OF COMPANY. PRICES AND TERMS CORRECT
PURCHASING
CHARGE

PRICES & TERMS CORRECT
ENG. DEPT. APPROVAL CONST. CHARGES
ENTERED
APPROVED

INVOICE CHECKED AND ENTERED ON REQUISITION
EXTENSIONS CORRECT
CHECKED AGAINST PURCHASE REQUISITION
ENTERED

ABOVE MATERIAL RECEIVED
AND SAME IS ... SATISFACTORY
CHECKED BY
APPROVED BY
APPROVED FOR PAYMENT ONLY
AUDITOR
FINAL APPROVAL AUDITOR

AMOUNT OF BILL $
LESS FREIGHT $
NET $
DATE PAID
CHECK NO.

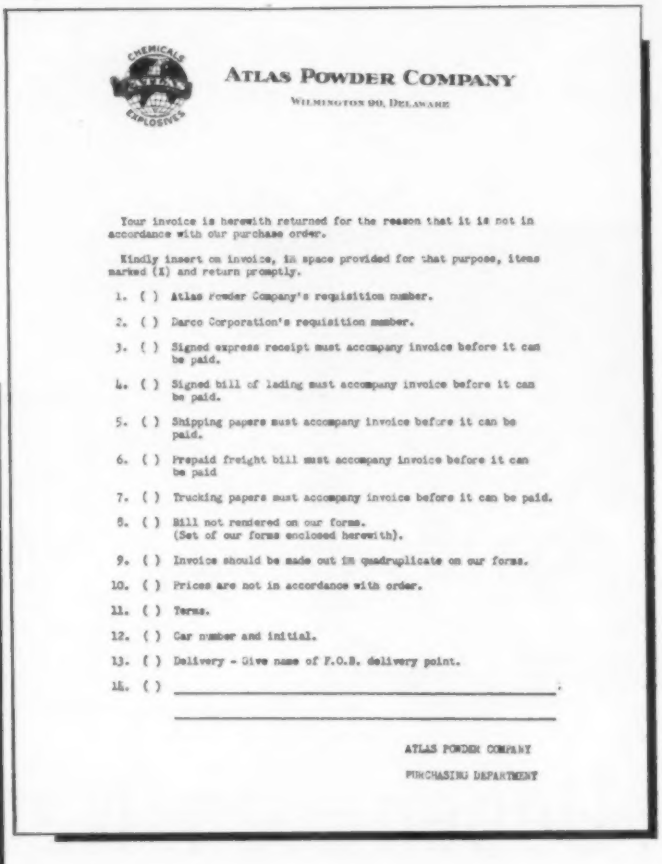
Atl. 113 43M Feb 10-46

*The purchase Invoice form is sent to vendor in quadruplicate with the purchase order, and billed by vendor. The form is designed to provide for complete check of order and invoice, and satisfactory receipt of material ordered.*

*Credit invoice which is sent to vendor with the Credit Requisition is similar to this form and printed in red.*

*In event invoice is not correctly filled out, it is returned to the vendor with the check list reproduced at the right, for correction.*

*The instructions on the Purchase Order among other things provide that "Discount term will run from the date Invoice is received made out in exact accord with above instructions."*



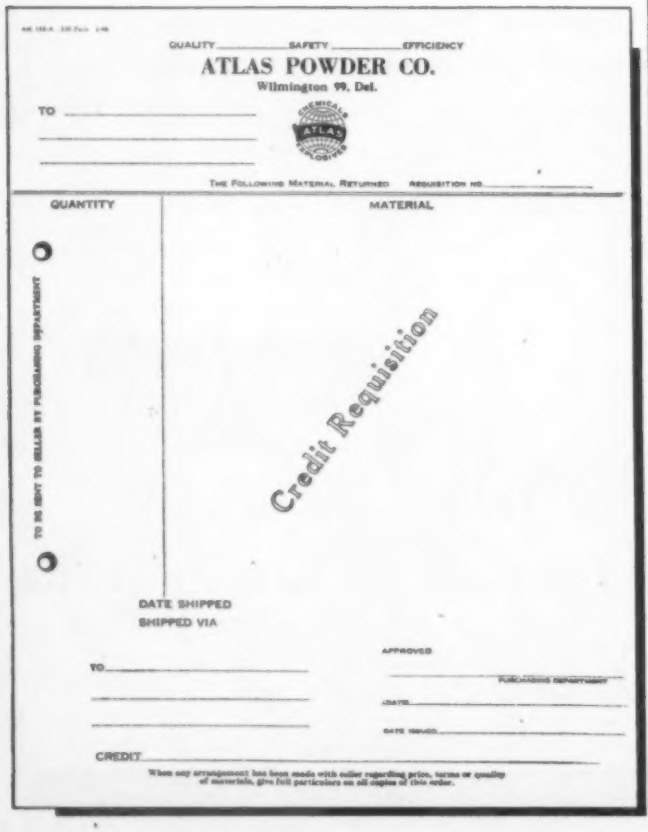
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE

Your invoice is herewith returned for the reason that it is not in accordance with our purchase order.

Kindly insert on invoice, in space provided for that purpose, items marked (X) and return promptly.

1. ( ) Atlas Powder Company's requisition number.
2. ( ) Darco Corporation's requisition number.
3. ( ) Signed express receipt must accompany invoice before it can be paid.
4. ( ) Signed bill of lading must accompany invoice before it can be paid.
5. ( ) Shipping papers must accompany invoice before it can be paid.
6. ( ) Prepaid freight bill must accompany invoice before it can be paid
7. ( ) Trucking papers must accompany invoice before it can be paid.
8. ( ) Bill not rendered on our forms. (Set of our forms enclosed herewith).
9. ( ) Invoice should be made out in quadruplicate on our forms.
10. ( ) Prices are not in accordance with order.
11. ( ) Terms.
12. ( ) Car number and initial.
13. ( ) Delivery - Give name of F.O.B. delivery point.
14. ( ) _____

ATLAS POWDER COMPANY
PURCHASING DEPARTMENT



QUALITY ... SAFETY ... EFFICIENCY

ATLAS POWDER CO.
Wilmington 99, Del.

TO

THE FOLLOWING MATERIAL RETURNED ... REQUISITION NO.

| QUANTITY | MATERIAL |
|---|---|
| | |

Credit Requisition

TO BE SENT TO SELLER BY PURCHASING DEPARTMENT

DATE SHIPPED
SHIPPED VIA

TO

APPROVED
PURCHASING DEPARTMENT
DATED
DATE ISSUED

CREDIT

When any arrangement has been made with seller regarding price, terms or quality of materials, give full particulars on all copies of this order.

*Left: The Credit Requisition is used for obtaining credit for materials returned to vendor, etc. It is accompanied by credit invoice similar to the one on this page, printed in red. Distribution includes copies for all departments interested.*



*High-speed billing with Moore Continuous Fanfold Forms*

## The dotted line that slashes overhead

One girl. One machine. A dotted line.

Put them together in your business — and they complete *almost twice as much work* as before! The magic dotted line holds together sets of Moore continuous forms. It lets work hurtle *continuously* through typewriter, billing or tabulating machine—eliminates wasteful hand operations.

By bringing mass production to the office, Moore continuous forms cut costs for every type and size of enterprise.

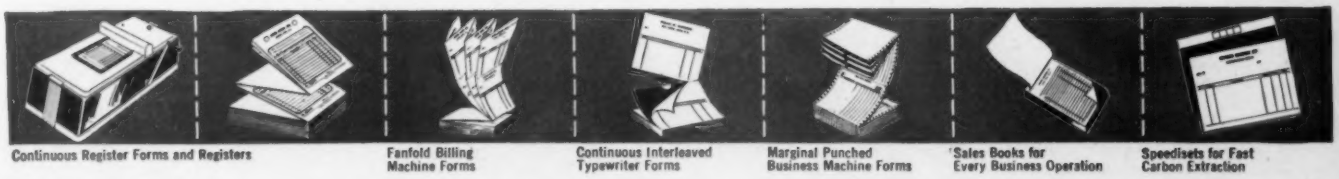
Moore designed a Fanfold invoice-shipping order for a Massachusetts candy manufacturer. Result: work that once needed 3 writings was cut to "one form — one writing" efficiency — with a sharp saving in man-hours!

Moore forms can cut costs in your business. For proof, call your local Moore office—in over 200 cities, nearly everywhere. Or write any Moore factory: Niagara Falls and Elmira, N.Y.; St. Paul, Minn.; Denton, Tex.; Los Angeles and Emeryville, Calif.; Salem, Ore. Also, sales offices and factories across Canada.

**MOORE**

**BUSINESS FORMS, INC.**

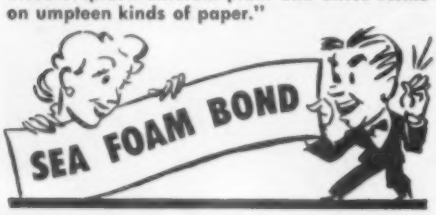
A national company offering a complete range of modern business forms * * * THE RIGHT BUSINESS FORM FOR EVERY FORM OF BUSINESS!



Continuous Register Forms and Registers | Fanfold Billing Machine Forms | Continuous Interleaved Typewriter Forms | Marginal Punched Business Machine Forms | Sales Books for Every Business Operation | Speedisets for Fast Carbon Extraction



The P.A. was in a stew again! . . . trying to make minimum costs even more minimal. Said he, "There must be a way to standardize these umpteen different plant and office forms on umpteen kinds of paper."




That was my cue. "Time we tried Sea Foam Bond, Boss. Ideal for all kinds of factory and office forms. It's thin and lightweight . . . really costs far less because you get so many extra sheets per pound."




Sea Foam makes 14 carbons with pen, pencil or typewriter. Takes half the file space. Comes in colors for accurate routing. It's nationally advertised . . . and famous for quality for 35 years . . .



NOW I'M SOLD ON SEA FOAM BOND

EFFICIENCY IS UP AND COSTS ARE DOWN!

SEA FOAM BOND

● Purchase Orders ● Job Orders ● Report Sheets
● Inventory Forms ● All Factory and Office Forms



● Refreshes Direct Mail
● In 7 Gay Colors

BROWNVILLE PAPER COMPANY
15 Bridge St., Brownville, N. Y.

My Boss isn't in a stew but we'd certainly like to cut costs on paper and standardize office forms.

Please send a FREE SEA FOAM TEST KIT and color samples for multiple forms.

Name.....

Company.....

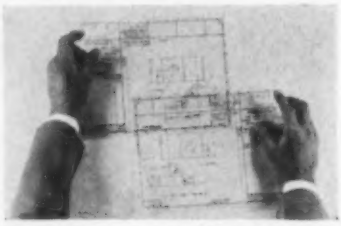
Address.....

☐ We have a printing plant and would like to test Sea Foam Bond with no obligation to us.

Please send me.....
(Indicate requirements for test run)


## NEW DIRECT-POSITIVE FILM FOR MAKING REPRODUCTIONS

A revolutionary, new direct-positive film for making top-quality reproductions of engineering and architectural drawings and of maps and physical surveys has been developed by the Eastman Kodak Company.



Known as Kodagraph Autopositive Film, the new film may be handled in normal room light and produces a positive copy directly from a positive original drawing, without a negative step. It may be exposed on blueprint or whiteprint equipment or other copying machines having a high-intensity light source.

The film is said to provide maximum print-back speed because of its highly translucent support, and to easily retain fine lines and minute detail because of the high resolving power and contrast of the silver-sensitized emulsion. As a result, the film is declared unequalled for restoring worn, stained, or faded drawings without the necessity of retracing by hand. Its printing speed, three to five times faster than intermediates on paper, makes it particularly valuable for turning out large quantities of shop prints in the shortest possible time.

Since the base of Kodagraph Autopositive Film is highly translucent, it may be printed with the emulsion side of the film in contact with the face of the drawing to produce a "reverse-reading" positive which can be easily viewed from the back to become, in effect, right-reading. The film is available in both 30- and 100-foot rolls in the following widths: 24, 30, 36, 42, and 44 inches.

## SOUND RECORDER WITH AUTOMATIC VOICE ACTIVATION

Among the unique features of new sound recorder known as the Recordall developed by Miles Reproducer Co., 812-14 Broadway, New York, N. Y., is automatic voice activation, automatic volume control of nearby and distant voices, automatic equalization of incoming and outgoing voices over the telephone, operation under poor acoustical conditions, and remote control operation within a building.

The Recordall employs a permanent jewel to record or to playback continuously up to 3½ hours (up to 24 hours on custom-built models) on each face of an endless plastic band of safety film known as Sonaband. The film is automatically self-aligning, and is quickly replaceable.

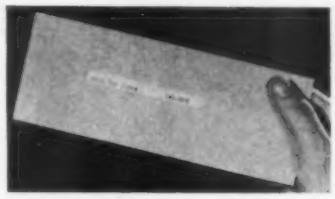
Recording is possible without a supervising attendant since the unit is automatically voice-powered, whereby the vibrations of the voice coming through the microphone or telephone instantly start the machine, and the cessation of sound automatically causes the machine to stop within 4 to 6 seconds.

Since one does not have to handle to microphone or to operate controls for long time recordings, the person dictating may sit, stand or walk, have free use of his hands and may talk in tones ranging upward from a whisper. Automatc features and foot controls facilitate transcribing from a combination recorder-transcriber or from a separate transcriber.

The new type Recorder weighs only 15 pounds, and is said to be highly applicable for use in the office, laboratory, plane, train, or anywhere for the recording of anything and everything. It is especially practical for conference recording, sound-powered one-man inventory taking, court proceedings, etc.

## NEW PAYCHECK ENVELOPE

A paycheck envelope that insures not only privacy but reduces the time and cost of making up payrolls, has been developed by the Outlook Envelope Company, 1001 Washington Boulevard, Chicago. The glassine transparency is placed



Only the payee's name and number are shown

in such position as to show only the name and number of the employee as it appears on the check. The paper in the envelope is opaque. The envelopes are made in sizes and shapes to meet the specification of the user's check. Samples available on request.

## BUBBLER-COMPARTMENT TYPE ELECTRIC WATER COOLER

Combination bubbler-compartment type water cooler has been added to its line of electric water coolers by the Kelvinator company, Detroit 15, Mich. It is known as the Model PE-3R and was designed for installation in small offices, shops, factories, locker rooms, and so on. Its capacity is 3 gallons of cool drinking water per hour. Coolness can be maintained anywhere within a range of 36 to 46 degrees Fahrenheit. The compartment has capacity for a full case of average-size beverage bottles, and will also hold tall, 32-ounce beverage bottles or quart milk bottles in upright position. A push-button automatic fastener and integral door lock is furnished with two keys. It is stated that water will not squirt or splatter over the top of the cooler. Valve, tops and pre-coolers meet all sanitary and health codes.

(*Please turn to page* 228)

# It costs no more to get these Durable Mimeograph Stencils

## . . . for longer runs
## . . . better visibility

You, too, will quickly appreciate the superior quality of these Mimeograph Stencils. They've *got* to be good — and they are good . . . users report that with careful handling they have been able to reproduce from 5000 to 10,000 copies. The velvet finish of these Stencils gives better visibility and sharp, clear reproductions.
They're extra tough and tear-resistant, too . . . excellent for stylus work.






## Business Relies on Underwood Corporation Supplies

**Mimeograph Ink** . . . quick drying, non smudging. Readily washed off hands and clothes with only soap and water.

**Correction Fluid** . . . quick acting . . . does not "pin hole" any make of stencil. Packed with camel-hair brush and burnisher. Sealed to prevent evaporation and waste.

**Hectograph Carbons** . . . provide beautiful, sharp, clear masters. Eliminate unsightly stains on hands and clothing. Not affected by summer temperatures or high humidities.

**Correspondence Carbon Papers** . . . five complete lines . . . each in different paper weights and coatings to fit individual requirements.

**Carbon Rolls and Paper Rolls** . . . carefully manufactured to exacting specifications for specific use on Underwood Elliott Fisher and Underwood Sundstrand accounting and billing machines and all other types of office machines. Tally rolls are also available in standard lengths to fit most makes of accounting machines.

**Ribbons** . . . especially designed for long life and strong impressions. Made in a variety of colors and color combinations . . . in various degrees of inking, and with special purpose inks for unusual requirements.

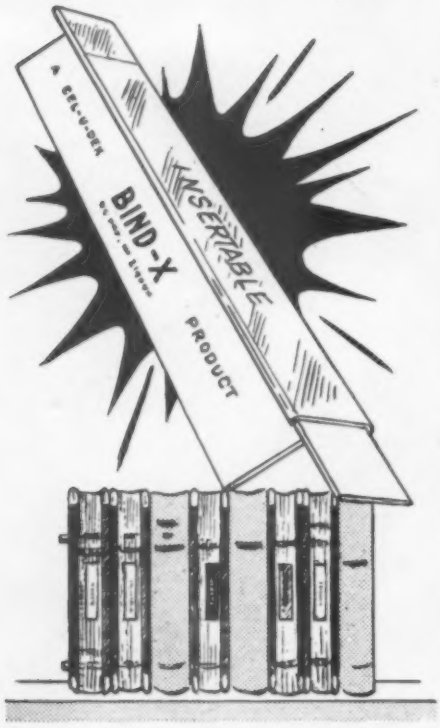
For ease of handling . . . for clear, uniform impressions . . . for maximum copies, always insist on the ***Underwood Corporation Supply Line.***

©1949

# Underwood Corporation

One Park Avenue
New York 16, N. Y.
Supply Division
Burlington, N. J.

# AN INDEX DEVICE THAT SHOUTS!




**Sharp, visible color-panels are the key to the Bind-X Index System.**

**8 distinct colors to arrange in many combinations for fast, accurate reference in . . ..**

★ *POST BINDERS*
★ *SHELVES*
★ *MAPS & PLANS*
★ *TRANSFER FILES*

**A simple, inexpensive system to save reference and filing time.**

**Information? A penny postcard to . . .**

**CEL-U-DEX**
1 MAIN STREET BROOKLYN, N. Y.


## IBM ANNOUNCES PROMOTIONS REPORT ON WORLD TRADE SALES

International Business Machines Corporation, New York recently announced the following promotions and changes in the executive management of the IBM.

Thomas J. Watson, president of the company since 1914, was elected chairman of the board, chairman of the executive and finance committee, of the International Business Machines Corporation, and chairman of the board of the IBM World Trade Corporation, newly organized as a wholly-owned subsidiary



**Thomas J. Watson, Chairman of the Board, IBM Corp., and Chairman of the Board IBM World Trade Corp.**

to handle IBM business outside the United States. Mr. Watson will serve as chief executive officer of both companies and will divide his time between the domestic and foreign organizations.

In announcing these changes and several others, following a meeting of the board of directors at IBM World Headquarters, 590 Madison Avenue, Mr. Watson said that they were occasioned by the rapid growth of IBM and its program of expansion throughout the world which requires greater division of responsibility and increased executive personnel.

John G. Phillips, executive vice president and director, was elected president. Mr. Phillips, who joined IBM in 1918 as secretary to Mr. Watson has served in every other corporate office in the company.

Thomas J. Watson, Jr., vice president and director, was elected executive vice president. Mr. Watson, Jr., joined IBM in a sales capacity after graduation from Brown University in 1937, and became a vice president and director in 1946.

Dause L. Bibbey, general manager of the IBM at Poughkeepsie, N. Y., was elected vice president, with headquarters at Endicott, N. Y. Mr. Bibby has a thorough knowledge of every phase of the IBM in factory and field. Wm. L. Lewis, manager of production and engineering, also was elected vice president.

### World Trade Sales

At the first regular meeting of the board of directors of the IBM World Trade Corporation, newly-organized wholly owned but independently operated subsidiary handling International Business Machines activities outside the United States, Thomas J. Watson, chairman, reported an increase of 20 per cent in world trade sales of IBM Accounting Machines for the first eight months of 1949 as compared with the same period in 1948.

Production of IBM's foreign factories for the first eight months of 1949 exceeds by 90 percent the production for the entire year 1948. Last year, IBM's foreign business surpassed that of 1939 by 369 per cent. The company's foreign personnel today numbers 7,862, more than double the 1939 figure.

In France, factory output for the first six months of 1939 equalled the French output for the entire year of 1948, and plans are under way for a fifty percent increase in manufacturing floor space. General headquarters for France are located in the IBM Building at 5 Place Vendome, Paris.

In Germany, the manufacturing floor space has been doubled since the war, and the factories there are now actively producing equipment for German consumption and for export to other European countries.

In Italy, the factory built in Milan in 1935 and expanded after the war will be greatly enlarged.

In England, a new factory purchased at Hammersmith, London, for the manufacture of International Time Recording products will be in production in January.

In Canada, construction will begin soon on another IBM plant in Toronto which will double the manufacturing facilities there.



**John G. Phillips, president, International Business Machines Corporation**

Ten small plants for the manufacture of punched cards already are in operation throughout Europe, and facilities for manufacturing cards and time recording equipment on the Continent will be further enlarged.

Production also is being carried on in Latin America in a modern assembly plant in Rio de Janeiro, Brazil, and in card manufacturing plants in most of the other Latin American countries.

## NAMED VICE PRESIDENT IN CHARGE OF SALES FOR CLARY CORP.

Appointment of Marvin S. Bandoli to fill the new post of vice president in charge of sales and distribution is announced by the Clary Multiplier Corp., San Gabriel, Calif., manufacturers of calculators and cash registers. Mr. Ban-

(*Please turn to page* 230)

click

and it's out!



removes ALL sizes of
office staples faster, easier!

new Swingline

# STAPLE X TRACTOR

Just hold the hook flat over the staple, CLICK—and the staple is OUT! SAVES TIME—it centers itself over the staple, ejects the staple as it extracts it! And it leaves the paper intact — even *onionskin!*

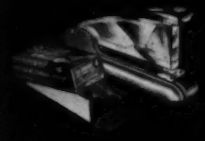
Colorful red, green, blue and grey molded plastic case and chrome-plated steel body. The famed SWINGLINE precision-engineering assures lifetime wear. Retails at 60¢ (slightly higher in the West).

The perfect *personalized* gift or advertising premium to build sales, goodwill! There's space on the case for company name, trademark or advertising slogan. Get details from your stationer or write direct.




PERFECT PREMIUM! Every office and home that has a stapler needs one. Keeps your company name headlined!

THE SWING IS TO SWINGLINE FOR BETTER STAPLING!
Swingline Staplers in Jeweltone Decorator Colors
Swingline 100% Round Wire Speedpoint Staples



SPEED PRODUCTS COMPANY, INC. · LONG ISLAND CITY 1, N. Y.

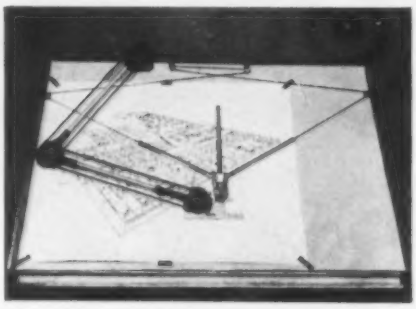
(*Continued from page 228*)

doli for a number of years was with Victor Adding Machine Co., serving as a member of the board of directors and vice president in charge of distribution. Also, he was formerly national sales manager of the Kelvinator Division of Nash-Kelvinator and vice president in charge of sales for the Tracy Company of Pittsburgh, Pa.

## DRAFTSMAN'S INSTRUMENT SIMPLIFIES PERSPECTIVE DRAWING

A new draftsman's instrument which makes it comparatively simple to create perspective drawings, has been developed by the Charles Bruning Company, 4754 Montrose Ave., Chicago, Ill. Known as the "Perspect-O-Metric", it automatically guides the draftsman's pencil toward the established vanishing points from any position on the drawing board. Special scales instantly reduce distant portions of the subject to their correct proportions. The instrument attaches to any standard drafting machine and is also available for attachment to parallel ruling straight edges.

It provides for two vanishing points which can be located at any position on the edges of the drawing board, and swinging right and left scale arms are held in alignment with these vanishing points by a piano wire spring which is attached to the end of the scales, and runs around pulleys clamped over each of the chosen vanishing points. No matter where the instrument is placed on the drawing board, the scale arms remain oriented to the chosen vanishing points.



This saves the draftsman considerable time and labor for his scale arms are always automatically aligned.

The scale arm may be immobilized, and the instrument used for isometric drawings.

## NEW OFFICE EQUIPMENT CATALOG

Catalog #50 has just been released by Maso Steel Products, 81 W. Van Buren St., Chicago, Ill. New equipment items listed include general purpose office machine stand, and new all steel elevator stand featuring tip-toe control, curved legs and offset center brace for added leg room. Among the listings are utility tables, personal files, waste baskets, wood desks, steel files, lockers and cabinets and steel storage files.

## DEVELOP METHOD FOR DUPLICATING MAGNETIC RECORDINGS

Magnetic recordings on tape, wire, film, endless belts and magnetic discs can now be duplicated by a process developed at Armour Research Foundation of Illinois Institute of Technology. The new process is described as being similar to "contact printing" in photography. It is said to be rapid, simple, and economical. Duplicate copies of any magnetic tape recording can be made at high speed by printing from a master tape which runs in contact with a copy tape. Magnetic disk and endless belt records can be copied in the same manner.

Duplicating a wire record has been done successfully in laboratory experiments, but it is stated that this is much more difficult than other forms. An economical process is expected to be worked out within a short time.

Copy tape may be any of the standard tapes now in use. Within certain limits the copy speed can be very high, and speed consistency is not critical, it is said. In some experiments tapes were copied at 13 times the playback speed. When it is considered that all the channels of a multi-channel tape can be copied at the same time it is pointed out that the saving in time can be considerable.

Copies are made with negligible loss of fidelity and with no appreciable increase in the signal-to-noise ratio.


BETTER PROMOTIONS?
Rising is Right! Here's why—



Whether it's broadside, brochure or envelope stuffer you're planning, the first job is to get attention. Rising Intralace has the clean, crisp, quality "look" that stands up and *gets* attention. Your printer knows the best buy is undoubtedly—

**Rising Intralace**

- New brilliant white
- Inexpensive
- 5 weights
- Distinctive pattern appearance
- Envelopes to match in 5 sizes
- Specially sized for offset and gravure
- Excellent printing surface for letterpress

WHEN YOU WANT TO KNOW . . . GO TO AN EXPERT!
Rising Papers
ASK YOUR PRINTER . . . HE KNOWS PAPER!
Rising Paper Company, Housatonic, Mass.

DON'T FILE IT— *Hang it!*



in Oxford
PENDAFLEX®
hanging folders



▲ it's suspended
not supported ▼

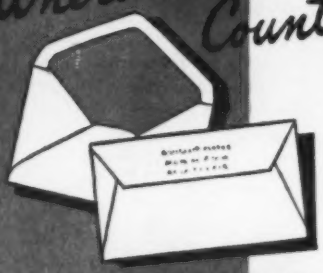


Even in your own cabinets, Pendaflex hanging folders cut filing-and-finding time in half! Just empty the cabinet drawer, set the Pandaflex frame in it, and hang the Pendaflex folders on the frame. Gone are slumping, sagging files. Instead, every folder and its contents are so easy to find, you'll wonder how you ever managed without this great filing convenience!

TODAY! *Drop us a card for the name of nearest dealer!*

Oxford FILING SUPPLY CO., INC.
Garden City, N. Y.

Where TASTE Counts!



GREETING CARD
and
SOCIAL ENVELOPES

more people ask for SHEPPARD . . . The Envelope with the Flavor-Seal Flap

In Business . . . Good Taste calls for quality envelopes with distinctive corner cards.

TAKE the TASTE TEST TODAY
Write for Sample



Sheppard
ENVELOPE CO.
No. 1 Envelope Terrace
Worcester 4, Mass.
Phone: 2-4674

## NEW MODEL ADDRESSING MACHINE 2000 TO 2500 PER HOUR

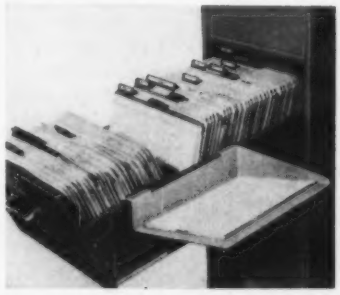
Announcement is made by the Weber Addressing Machine Co., 200 West Central Road, Mt. Prospect, Ill., that new model of its A-2 addressing machine is ready for the market. The machine operates on the "spirit" principle of reproduction, and does not require stencils, plates, ribbon or ink. Addresses are transferred to the mailing piece from a list type on a roll of special paper. An original list can be used again and again up to 100 times, according to the company. Corrections are made by means of gummed stickers.

The new machine is equipped with an automatic ejector which eliminates the necessity of manually removing the addressed piece from the machine. Production is placed at from 2000 to 2500 addressed pieces per hour.

The base of th machine is fitted with an adjustable guide which permits the addressing of all types of mailing pieces in a wide range of sizes. Further details about this low cost unit will be furnished promptly by the manufacturer.

* * *

## HANDY FILING SHELF



A practical filing department accessory designed to hang on the side of a file drawer is the aluminum filing shelf shown in the accompanying illustration attached to a GF Super-Filer Drawer. The shelf, which is made by the General Fireproofing Company, Youngstown, Ohio, is of light anodized aluminum. Where a large amount of material is to be filed use of this unit speeds up filing considerably. It provides a handy location for the material being filed and can be placed in position or removed instantly. When used with rigid front files it may be hung on the front of the filing cabinet drawer.

* * *

## NON-SMUDGING T-SQUARE

Ink ruling without smudging features use of new transparent plastic T-Square made by the C-Tru Ruler Company, 827 Windsor St., Hartford, Conn. The non-smudging feature is made possible by the use of lugs which raise the T-Square from the drawing surface. The tool is offered in 15, 18, 24, 30 and 36 inch sizes. The edges of the T-squares are made with hairline accuracy and the arm is recessed in the hand to insure rigidity.

(*Please turn to page* 232)



Uh-uh . . .
Don't Shout!

There's a better way to get results from your sales force . . .
*Write for our New Catalog*
of nationally advertised products
for
SALES CONTEST PRIZES
CHRISTMAS AND
GOOD WILL GIFTS
★ ★ ★
*Ronsons—Bulovas—Novelties*

TRAVELLERS
PREMIUM CO.
Eleven Broadway
New York 4, New York

Eberhard Faber
MONGOL
the Pencil that
STAYS SHARPER LONGER*




*Guaranteed not to break in normal use!*

*Scientific laboratory tests conclusively prove superiority in point-sharpness for the exclusive MONGOL Complastic lead—over the average of all well-known pencils in the MONGOL price range. For Value insist on MONGOL!

Trade Marks Reg. U. S. Pat. Off.

ENTERING OUR SECOND CENTURY OF LEADERSHIP

EBERHARD FABER PENCIL COMPANY

## PORTABLE MICROFILMER FOR SMALL BUSINESS

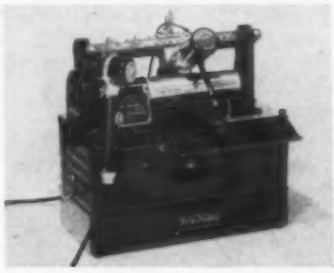
A new copying device marketed as the Bolsey Portable Microfilmer, and designed to make microfilming feasible for business and professional men, is announced by the Migel Distributing Co., 118 E. 25th Street, New York, N. Y. The Microfilmer uses a special model miniature camera, and stand. Lights and reader are designed to co-act with the camera for producing microfilms of good quality. The camera uses 35mm film cartridges. The field covered by the microfilmer is approximately 9 x 14". Larger fields, such as newspapers, full-size drawings, etc., may be covered by supplying supplementary lighting.

A file box with indexing system is available, with a capacity of 42 rolls of film for active storage. Each film can may be used for up to four rolls of film for inactive storage. On the one-roll-to-a-can basis, 40 pictures per roll, and 2 letter-size documents per frame, 3360 letters may be filed in a single microfilm file box, 33,600 in a standard file drawer, and 134,000 in a four-drawer cabinet. If the documents are smaller than letter-size, i.e., checks, index cards, inventory records, etc., the filing capacity is increased accordingly.

A separate head is furnished for reading purpose, the image being restored to original size by projection on the base. If larger sizes are desired, the readerhead may be rotated for projecting the image on a wall or screen to a size two or three times the original. Printed matter available.

## CONVERTS ACOUSTICAL DICTATING MACHINES TO ELECTRONIC UNITS

Conversion of acoustical dictating machines is a simple procedure with the aid of a device known as the TeleTronic converter being marketed by Bachman & Baxter Sales Corporation, 3210 W. Olympic Boulevard, Los Angeles, Calif.



**TeleTronic Converter Installed with acoustical dictating machine**

The converter may be placed on the cylinder stand, or under the dictating machine as shown in the accompanying illustration. It does not change the acoustical recording mechanism of the original machine. It is claimed to amplify and reproduce voices with greater fidelity and clarity, and correspondingly make for more sharply defined playback, enabling the transcriber to easily distinguish tones that are nasal, and to easily pick up whispered or soft voiced dictation. The converter does not change present technique of operation. Printed matter available.

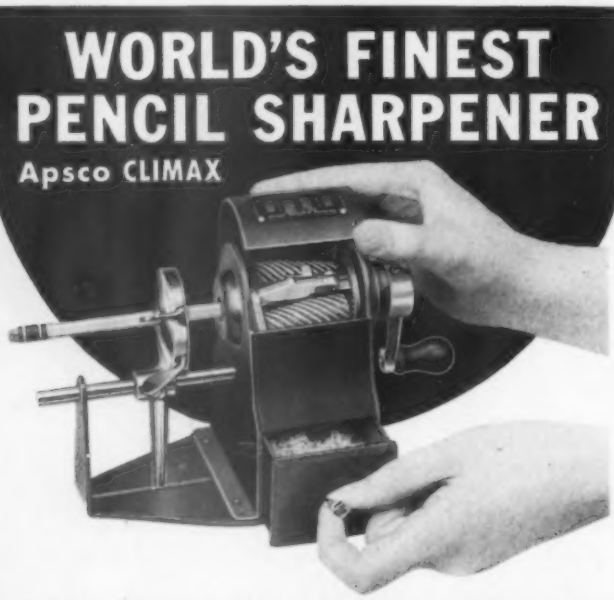
The company is also marketing an electronic telephone amplifier known as the Confer-fone, which makes possible the recording of telephone conversation on the TeleTronic converter equipped machine.

## NEW FEATURES HIGHLIGHT INTERCOMMUNICATION SYSTEM

Automatic audio-visual signalling is featured as important innovation in new intercommunication equipment produced by Executone, Inc., 415 Lexington Ave., New York, N. Y. Called "Chime-Matic" signalling, it is said to speed call origination. Pressing any button automatically announces the call at selected station by means of chime and signal light. There is no need for the caller to press talk bar or to announce himself, or for the individual being called to "match buttons" with the calling station. New electronic voice circuits improve selective sensitivity. Full trunkage switching allows as many simultaneous conversations as there are pairs of stations and also protects against eavesdropping or cutting in. Four types of systems using the basic units are available.


WORLD'S FINEST PENCIL SHARPENER

Apsco CLIMAX



Special, heavy-duty cutters sharpen over 4 times as many pencil points as *any* sharpener on the market. It costs less to buy the world's finest—a Climax. More points per pencil . . . less pencil waste . . . years of trouble-free service. See a demonstration of the Climax pencil sharpener at your dealers *today!*

Apsco Pencil Sharpeners

AUTOMATIC PENCIL SHARPENER CO.
1817 EIGHTEENTH AVENUE, ROCKFORD, ILLINOIS
SALES OFFICES IN NORTH HOLLYWOOD AND TORONTO

Weldon Roberts Erasers

A few of the many styles in America's finest quality erasers —for every erasing requirement.




WELDON ROBERTS RUBBER COMPANY
Newark 7, New Jersey

They Correct Mistakes in Any Language

## SMALL SIZE OFFICE DESK WITH 46" WIDTH

To meet the special need for a small size desk, the Security Steel Equipment Corporation, Avenel, N. J., has developed a practical desk which affords the space saving advantage of a 46" width. It is known as the Crestline 46-Inch. The

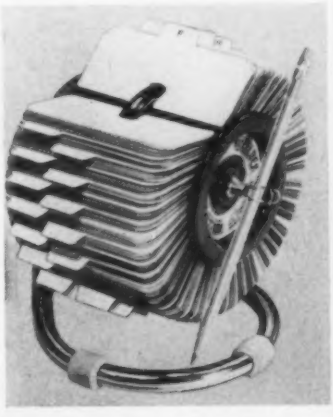


Space-saving 46" Crestline desk

file drawer at the right offers the advantages of ball suspensions and full-use extension, i. e., the drawer completely clears the pedestal and affords full access to every inch of filing space. All desks are 29" in height, adjustable to 30½" with auxiliary base or lengthened end panels. Knee space width of the desk illustrated is 26¾".

## NEW WHEELDEX CUB FILE

Improved appearance and added conveniences feature new Wheeldex cub file. This 1,000 card capacity file is supported by a tubular 5½" diameter bright chromed brass circle base stand with molded white rubber feet. The base is curved to form a handy grip at the left, and then extends through the wheel to provide a built-in hollow axle holder, or,



New Wheeldex cub file with pencil holder in axle

special clip to hold pencil vertically may be inserted in end of axle. The new cub design eliminates the usual external stabilizer adjustments and provides completely automatic internal operation of this device which permits free spinning rotation yet automatically holds the wheel steady for hand-free inspection and use. The unit is made by the Wheeldex Manufacturing Co., Inc., 40 Bank Street, White Plains, N. Y.


BUY DIRECT FROM MANUFACTURER

SAVE ON CATALOG MAILING ENVELOPES

(The Backbone of your envelope needs)
3 styles that take catalogs and important bulk matter

• Plain Flap
• Bull Grip String and Button
• Burrless Metal Clasp



FOR QUOTATIONS — CLIP AD TO SAMPLE of present envelopes and send directly to Equitable. State approximate annual requirements.

America's leading publishers and catalog users specify Equitable large mailing envelopes. Quality is right; price is right because they're made right in Equitable's own mill, from stock to finish.

Equitable PAPER BAG COMPANY
Mills at Orange, Tex.
47-00 THIRTY-FIRST PLACE
LONG ISLAND CITY 1, N.Y.





THIN PAPERS Reduce TYPING, MAILING and FILING COSTS Use ESLEECK THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Esleeck Manufacturing Co.
Turners Falls, Mass.



SAVE TIME WITH THE MORRIS Phone Rest

Why buy useless, inefficient phone rests? A Morris rest actually RESTS on the shoulder without crimping or cramping. Easily adjustable for either shoulder, and any angle. Assures more work with less effort and irritation.

Specify the MORRIS PHONE REST when you order—from stationery stores. Sold everywhere, or write direct.



THE Bert M. Morris COMPANY
8651 WEST THIRD ST. • LOS ANGELES 37, CALIF.

# Among the ASSOCIATIONS

## Fourth Annual Pacific-Intermountain Conference Draws Large Attendance

The fourth Pacific-Intermountain Purchasing Agents Conference, held in San Francisco on September 16 and 17, had a registration of almost 250 purchasing agents. Total registration, including ladies, was 346. Represented at the conference were the Purchasing Agents Association of Northern California, Purchasing Agents Association of Los Angeles, and the Purchasing Agents Association of Utah.

Highlights of the first day's morning program were the welcoming address by Arthur J. Melka, President of the Northern California Association, and Purchasing Agent for Hydraulic Dredging Co. Ltd.; introduction of the head table and conference program chairman by Roscoe R. Bush, general Conference Chairman, and Purchasing Agent of Pacific Coast Aggregates, Inc.; and the keynote address by H. W. Christensen, Conference Program Chairman, and Director of Purchases, Columbia Steel Company. Mr. Christensen's theme was that of the entire conference, "Efficient Purchasing Performed by Intelligent, Informed, Well-Trained Purchasing People is a Key to Profits".

George A. Renard, Executive Secretary-Treasurer of the National Association of Purchasing Agents, addressed the afternoon session on "You Can Purchase Profits—From One P.A. to Another".

Panel discussions, with the general theme "Profits from Purchasing", were held throughout the afternoon, with the following subjects and chairmen:

Business - Markets - Prices — E. H. Weaver, Manager of Purchases, Union Oil Company of California; Materials Management—The Purchasing, Warehousing, and Reclamation Phases of a Materials Management Program—C. T. Hofmeister, Division Manager, Purchases and Stores, Standard Oil Company of California; Rolled Steel Products-Forgings-Castings—A. R. Tietjen, Manager of Purchases, Southwest Welding & Manufacturing Co., Los Angeles; Petroleum Products-Fuel Oil-Natural Gas—H. Leland Weber, Purchasing Agent, Fibreboard Products, Inc., San Francisco; Lumber and Construction Materials—E. H. Polk, Purchasing Agent, Southern Pacific Co., Portland, Ore.

Non-Ferrous Metals—W. C. Allen, Purchasing Agent, Utah Power & Light Company, Salt Lake City, Utah; "Your Educational Pay-Off"—George W. Aljian, Director of Purchasing & Packaging, California and Hawaiian Sugar Refining Corp. Ltd., San Francisco.

A series of forum meetings were held on Saturday morning, as follows:

Iron and Steel—B. E. Gobel, Purchasing Agent, Consolidated Western Steel Corp., South San Francisco, chairman; A. L. Wille, Director of Purchases, Moore Dry Dock Co., Oakland, co-chairman.

Oil Company Buyers—C. S. Perkins, Assistant Manager of Purchases, Union Oil Co. of California, Los Angeles, chairman; S. T. Covell, General Manager,

(*Please turn to page* 236)

## British Purchasing Officers Hold 18th Annual Conference



The 18th Annual Conference of the British Purchasing Officers Association was held at the Royal Hotel, Scarborough, Yorkshire, England, September 30 to October 2. Shown above are some of the large group of members in attendance.

The program opened Friday evening, September 30 with a pre-conference reception to the Mayor of Scarborough and the President of the British Purchasing Officers Association.

The principal speaker at the Saturday morning session was Lewis C. Ord, Canadian economist. Mr. Ord's subject was "The Purchasing Officer, Top Management, and Efficiency in Industry."

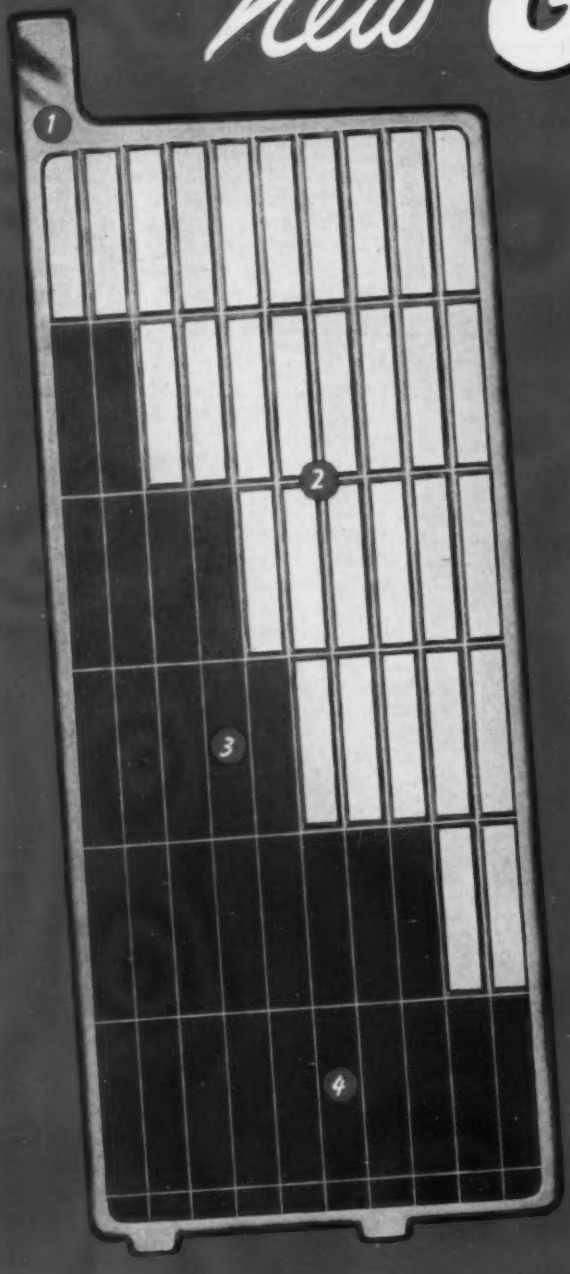
At a dinner dance on Saturday evening, James Ewing, Esq., Chairman of The Bradford Dyers' Association, Ltd., proposed the toast "The Association". The response was given by F. O. Ashmore, Calico Printers' Association Ltd., President of the British Purchasing Officers'

(*Please turn to page* 236)

# New GOULD "Z" Plate

## REVOLUTIONIZES BATTERY DESIGN!

*Only GOULD Has It!*




A revolutionary new plate design greatly improves battery performance. The new Gould "Z" Plate means that Gould batteries stay new longer! Here's why:

1. Solid, non-porous positive grid.
2. All grid members are heavy with same cross section.
3. Regenerative oxide renews itself throughout battery service.
4. More active material per battery pound.

Brand new from Gould's modern laboratories and pilot plant. Available shortly in all "Thirty" and "Kathanode" types. Ask for literature on how Gould's new casting techniques improve battery performance.



The Gould "Thirty"
More than ever—America's
Finest Industrial Truck Battery.

**GOULD**

**STORAGE BATTERY CORPORATION**

TRENTON 7, NEW JERSEY

*Always Use Gould Automobile and Truck Batteries*

# Rochester Association Bids Purchasing Agents Enroll In R.I.T. Technical Course

Heading its announcement, "Yes, you *can* take it with you — if you'll come and get it" the Purchasing Agents Association of Rochester has issued an invitation to purchasing agents in all parts of the country to enroll in the "Technical Problems in Purchasing" course which it is sponsoring at the Rochester Institute of Technology in December.

"How long is it since you have had a chance to step back from your job of Purchasing and view it objectively?", the invitation reads. The balance of the text says:

"Haven't these years of priorities, privations and probations made us a little careless about some of the technical problems we face every day?

"One sure way to shake off that lethargy is to enroll early for the next course in 'Technical Problems in Purchasing' at the Rochester Institute of Technology, Rochester, N. Y., December 5-10, 1949.

"This is a 'Shirtsleeve' school and this course is the equivalent of a full semester at regular speed. Schedule is 8:30 A.M. to 5:00 P.M. Monday through Friday, Friday evening 7:30-9:30, and Saturday A.M.

"Here's what you get—

I Modern Purchasing Function in Profile
II Interpretation of Blueprint Specs.
III Purchase of Machine Tools
IV Casting, Molding and Extrusion of Metals and Plastics
V Buying Industrial Lubricants
VI Distribution Problems and Price Practices
VII Verification of Quality and Quantity
VIII Materials Handling and Stores Methods
IX Buying Containers and Packaging
X Buying Textiles and Fibers
XI Raw Commodity Economics

"And these are some of the men who give it to you:

Col. George S. Brady, Director, Industrial Materials Service, Washington, D. C.; Harold J. Brodie, Instructor, Engineering Drawing, Rochester Institute of Technology, Rochester, N. Y.; Stuart Edgerton, Div. Purchasing Agent, United States Rubber Company, New York City; T. O. English, Assistant General Purchasing Agent, Aluminum Company of America, Pittsburgh, Pa.; Vernon Patterson, Development Metallurgist, Climax Molybdenum Company of Michigan, Detroit, Mich.; A. Henry Thurston, Domestic Commerce Division, Department of Commerce, Washington, D. C.; Wilson B. Wight, Assistant Purchasing Agent, Bausch and Lomb Optical Company, Rochester, N. Y., and Chairman "How to Buy" Committee N.A.P.A.

"Registration for the full course is $75.00 or $45.00 for sections I-V (first three days) or sections VI-XI (Thursday-Saturday). It is also possible, for the first time, to enter one registration at $75.00 and have several alternates at $7.50 each (only one person for each class). Applications must be on file by Dec. 1, and should be addressed to Alfred L. Davis, Associate Director, Evening and Extension Division, Rochester Institute of Technology, Rochester 8, New York.

"The Purchasing Agents Association of Rochester is sponsoring the course and extends a cordial welcome."

## ST. LOUIS ASSN. HEARS TALK BY JOHN P. SANGER

John P. Sanger, Vice President in Charge of Purchases, United States Gypsum Company, was the principal speaker at the first meeting of the new season of the Purchasing Agents Association of St. Louis. The meeting was held at the Club Caprice on Tuesday, September 27.



**Del Baker opening the first fall meeting of the St. Louis Association**

Mr. Sanger, who served as Assistant Director of Purchases in the OPM under Donald Nelson, and who was a member of the Advisory Committee of the Hoover Commission which studied the Federal Supply System, spoke on "Federal Purchasing—And What We Can Learn from It".

Before the meeting, two educational forums were held. The Purchasing Know-How forum featured "Negotiation and Price Analysis", led by John W. Reynolds and Preston M. Green. The Legal Aspects of Purchasing forum was led by Herbert DeStaebler, and J. E. Nolan, and featured the subjects, "What are the essential elements of a Contract" and "Offer and Acceptance".

The meeting was also the occasion of the awards of certificates to Washington University students who completed the Industrial Purchasing Course sponsored by the association last year. It has been announced that plans have been made to offer the course again, beginning the first week in February.

## PACIFIC CONFERENCE

(*Continued from page* 234)

Purchasing & Stores, Shell Oil Co., Inc., San Francisco, co-chairman.

Chemicals—G. A. Selby, Purchasing Agent, Los Angeles Chemical Co., Los Angeles, chairman; E. B. Donaldson, Purchasing Agent, Stauffer Chemical Co., San Francisco, co-chairman.

Governmental and Institutional Buyers—J. W. Hughes, Manager of Purchases & Stores, County of Los Angeles, chairman; J. F. Mispley, State Purchasing Agent, State of California, Sacramento, co-chairman.

Distributor & Jobbers—A. N. Brewer, Purchasing Agent, Tay-Holbrook, Inc., San Francisco, chairman; H. V. Cusick, Purchasing Agent, Earle M. Jorgensen Co., Oakland, co-chairman.

Packaging & Paper Products—George W. Aljian, Director of Purchasing & Packaging, California and Hawaiian Sugar Refining Corp. Ltd., San Francisco, chairman, H. R. Morrison, District Purchasing Agent, Union Oil Company of California, San Francisco, co-chairman.

The closing address of the conference was made by Walter N. McPhee, Purchasing Agent, Kelly, Douglas & Co. Ltd., Vancouver, B. C., and Vice President for District 1, National Association of Purchasing Agents. Mr. McPhee's subject was "The Ultimate in Purchasing".

## BRITISH CONFERENCE

(*Continued from page* 234)

Association. Mr. Ewing, one of the founders of the association, was formerly buyer for his organization.

T. L. Garner, Vice President of the association, proposed the toast "The Guests", and the response was given by Roger M. Lee, Esq., Chairman of The Calico Printers' Association Ltd.

On Sunday morning, a number of discussion sessions were held, as follows:

"The Purchasing Officer and Interdepartmental Cooperation", led by H. H. C. Wood, The Ingranic Electric Co. Ltd.

"Buying from the Nation", led by A. H. Thomas, British Belting & Asbestos Ltd.

"Standardization of Hospital Supplies", led by G. H. Sydenham, Welsh Regional Hospital Board.

"Statistics in Purchasing Work", led by H. Golding, Northern Aluminum Co. Ltd.

"Purchasing for the Hospital Service", led by W. J. B. Groves, Central Wirrall Hospital Management Committee.

A special session of the conference heard an address by Stuart F. Heinritz, Editor of PURCHASING.

On Sunday evening, Thomas F. Turner, the English Electric Co. Ltd. was installed as President of the British Purchasing Officers Association, succeeding Mr. Ashmore of the Calico Printers Association Ltd. Dennis Wragg, Thos. Firth & John Brown Ltd., Sheffield, was named the new Chairman of the National Council of the association, succeeding William Napper, South Suburban Gas Co.




# *Prescription for Sales!*

There's a billion and a half dollars of drugs and chemical sales in the nation's drug outlets where ancino acids, sulfas and pennicilins vie with cough drops and vitamins for the consumer dollar. New insecticides alone have accounted for tremendous new business and many related products have even greater volume than drugs and chemicals. It's a complicated, highly competitive business. That's why, where salesmanship and product protection counts, the drug manufacturers buy over 40 million *set-up* boxes every year. Your product, like drugs, can get the extra push of point-of-sale preference from a set-up box. Ask your nearest manufacturer of salesworthy set-ups for his ideas today.

**NATIONAL PAPER BOX MANUFACTURERS**
*Association*
AND COOPERATING SUPPLIERS
Liberty Trust Building • Philadelphia, Penn.


***Want Additional Product Information? See Page 19.***



Past presidents of the Tulsa Association: left to right, standing—H. A. Wilson, 1936; W. L. James, 1933; H. D. Patridge, 1932; H. B. Ward, 1931; W. R. Brown, 1930; G. A. Tompson, 1929; F. W. Robertson, 1925; J. W. Shields, 1922.



Past presidents of the Tulsa Association: left to right, seated—C. M. Taylor, 1937; M. F. Bridges, 1938; C. D. Taylor, 1939; H. E. Kaiser, 1940; J. S. Hawley, 1941; C. G. McLaren, 1942; R. M. McMahan, 1944; R. V. Stevens, 1945; K. G. Manning, 1946; G. C. Heidinger, 1947.

# Tulsa Association Holds Thirtieth Anniversary Celebration

The Purchasing Agents Association of Tulsa celebrated its 30th anniversary on Tuesday, September 27, with a reception and banquet in the Tulsa Club, at which distinguished figures in the profession paid tribute to the organization for its contribution to purchasing and to association history. Twenty-two of the 25 living past presidents of the association were guests of honor at the affair.

C. W. Wallace, President of the Purchasing Agents Association of Tulsa, and Assistant Manager of Materials and Purchasing, Mid-Continent Petroleum Corp., called the dinner meeting to order with an address of welcome. Expressing gratification at the active interest shown both in the association and its anniversary celebration, Mr. Wallace said, "let me assure you, as we go forward, that the same demonstrated methods of success that have been so valuable in the past will still be carried on in the future."

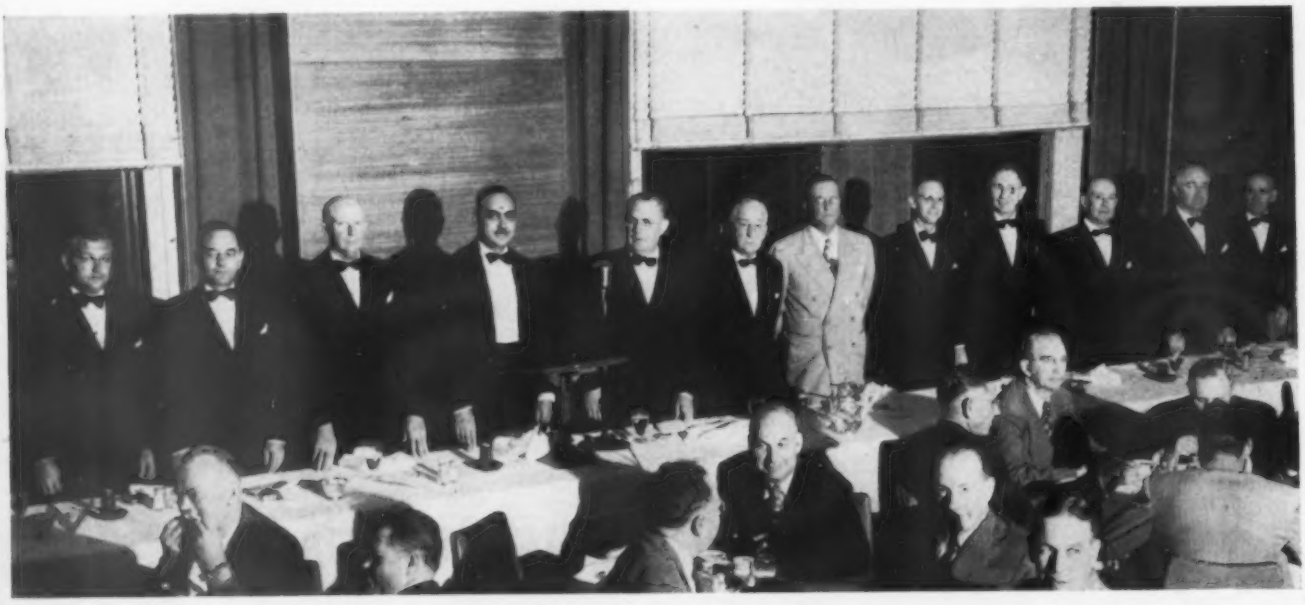
J. C. Nicholson, First Vice President of the association, Chairman of the Program Committee, and Purchasing Agent, Tretolite Company, then took over the program announcements and introductions of speakers.

### Past and Future Reviewed

The first speaker was H. M. Cosgrove, Executive Secretary of the association and Editor of the Mid-Continent Purchaser. Mr. Cosgrove introduced the past presidents present at the meeting and a number of prominent members. He then reviewed the years of progress the association has had and outlined the current objectives of the group, and its varied activities. He declared that the future of the association looks bright and promising.

Walter L. Bell, Vice President for District 2, N.A.P.A., and Purchasing Agent of Tarrant County, Fort Worth, Tex., spoke on the Tulsa Association's record in district and national affairs. He hailed the group as the pioneer association of the Southwest and paid a strong tribute to the leadership it has shown in association activities.

The principal speaker of the evening was Stuart F. Heinritz, Editor of PURCHASING. Mr. Heinritz' talk, "Who Profits From Purchasing?" appears on page 103 of this issue.



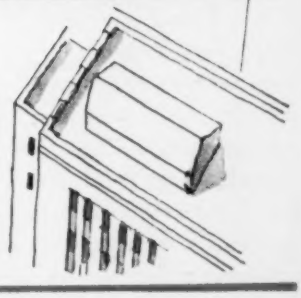
Shown at the speakers' table during the Tulsa Association's anniversary celebration: standing, left to right—E. A. Taggart, Executive Committee; J. C. Nicholson, Vice President; Walter L. Bell, Vice President, District 2, N.A.P.A.; Stuart Heinritz, Editor of PURCHASING; C. W. Wallace, President; H. M. Cosgrove, Executive Secretary, President—1921; Hon. R. A. Lundy, Mayor of Tulsa; H. M. Logan, Secretary-Treasurer; Past President F. P. Nopper, 1948; Past President O. E. McClatchey 1929, Past President J. H. Wolfe, 1943; E. R. Welch Assistant Secretary.

# High wire artist praises...

**H. I. Walker says, "I no longer get shocked when lightning strikes my high wire. G-E Textolite shoe soles give me complete protection."**

**GENERAL ELECTRIC**
**TEXTOLITE* LAMINATED**
*Plastics*
*REG. U. S. PAT. OFF.





It's the excellent electrical properties that enable G-E Textolite to perform this insulating feat. If it weren't for General Electric Textolite, high-wire artistry would be mighty uncomfortable . . . even deadly during electrical storms.

● If you haven't as yet used nonmetallic G-E Textolite laminated plastics in your products, you should give it a try. Versatile General Electric Textolite may be your solution to lower costs and product improvement . . . it has excellent electrical properties. Then too, its mechanical, thermal, and chemical characteristics are outstanding.

Although the story about the aerial artist may be a slight exaggeration, it does point up an important fact—G-E Textolite is continually solving difficult problems. Why not fully investigate this proven material. You'll profit. Plastics Division, Chemical Department, General Electric Company, One Plastics Avenue, Pittsfield, Mass.

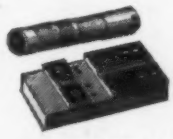
**G-E TEXTOLITE LAMINATED PLASTICS IS SUPPLIED IN:**



LOW-PRESSURE MOLDED PARTS



MOLDED-LAMINATED PARTS



FABRICATED PARTS



SHEETS, TUBES RODS

**GENERAL ELECTRIC**

CD49-J3

**SEND FOR THIS HELPFUL BULLETIN TODAY— IT'S FREE**

Write for your copy of "G-E Textolite Laminated Plastics." It lists grades, properties, fabricating instructions, and detailed information about Textolite industrial laminates.



**General Electric Company**
**Chemical Department (10-11)**
**One Plastics Ave.,**
**Pittsfield, Mass.**

Please send me the new G-E Textolite laminated plastics bulletin

Name.....

Firm.....

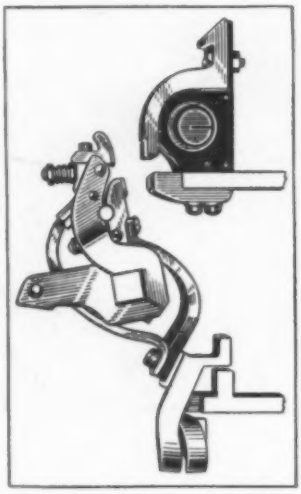
Address.....

City.....State.....

# BUSINESS IN MOTION

*To our Colleagues in American Business . . .*

This is the main contact assembly, open position, of a well-known air circuit breaker. It is complicated, but it does not take so much time and metal to make it as you might suppose. The unusual shapes in it are not cast, since castings would not have sufficient strength and lightness. Nor are these shapes machined out of solid metal, because that would be prohibitively expensive. Most of these parts (except for the flexible pigtail) are made of extruded shapes. No less than eight such special shapes make it possible to manufacture this assembly rapidly, economically and with precision.



An extruded shape is made by forcing heated metal through a die, which gives it the desired form. Unique forms and contours thus are possible. The process offers opportunities so numerous that they seem to be limited only by the ingenuity of the engineer and designer, who need observe but one condition—that the desired shapes must have a constant cross-section; that is, all grooves and slots must be parallel to the axis of extrusion.

Extrusion is, in effect, pre-machining in the Revere plant. The shapes are shipped in lengths, and in some cases it is only necessary to saw segments from them in order to produce a desired part. In other instances, more extensive machining may be necessary, such as slotting or drilling at angles to the axis. But whether much or little machining is required, it should not be forgotten that Revere's pre-machining means fewer operations and less scrap. This is also true in hot forging and hot pressing, where the use of extruded slugs in appropriate shapes will reduce the amount of metal flow and flash. Extrusion also produces metal that is dense, free from blow holes, strong and uniform, due to the many tons of hydraulic pressure required to force the hot metal through the die.

Revere produces these shapes in brass, bronze, nickel-silver and copper, and nothing pleases our salesmen and Technical Advisors more than opportunities to suggest new ways to use them for improved quality and economy.

Often such suggestions come while a Revere man is going through a customer's factory; he sees a difficult-looking part being made, and remarks: "I think I can save you some money on this." Revere is typical of a great many suppliers in this respect. So we suggest that no matter what you buy, whether it be metal or wood, plastics or glass, chemicals or containers, you permit your suppliers to see how your product is made. Their knowledge may be as valuable to you as their goods.

**REVERE COPPER AND BRASS INCORPORATED**
*Founded by Paul Revere in 1801*

☆ ☆ ☆

*Executive Offices:*
**230 Park Avenue, New York 17, N. Y.**


## BRITISH LECTURER TO SPEAK AT CHICAGO ASSN. MEETING

Colonel Rhys Davies, noted British lecturer, will address the Purchasing Agents Association of Chicago at a dinner meeting on Thursday evening, November 10, at the Hotel Sherman.

The subject of Colonel Davies' talk will be "Four Years of British Labor Government". Colonel Davies, O.B.E., D.S.O., Legion of Honor, has a long record of service, first in the British Army, later in British Intelligence Service, and finally during the last war as a high official in the British Ministry of Information.

## POLITICAL SCIENTIST SPEAKS AT DETROIT ASSN. MEETING

The first general meeting of the new season was held by the Purchasing Agents Association of Detroit at the Hotel Fort Shelby on Thursday, September 22. Arthur D. Hummel, Frederick B. Stevens Company, newly elected president,



**Arthur D. Hummel**

directed the affairs of the session, assisted by Walter E. Murray, R. C. Mahon Company, first vice-president; Andrew J. DeCarlo, Carboloy, second vice-president; and William R. Orth, Rinshed-Mason Company, treasurer.

Dr. Ferrel Heady, assistant professor of political science at the University of Michigan, was the principal speaker. Dr. Heady discussed the Hoover Commission report, with special emphasis on purchasing as handled by the various Federal agencies.

Chester F. Ogden, Detroit Edison Company, who was unanimously elected by the board of directors to represent the Detroit association within the national association was presented to the general membership.

## TRI-STATE ASSN. MEETS

The Tri-State Purchasing Agents Association met at the Prichard Hotel, Huntington, W. Va., on Tuesday, September 20. The program featured a forum on advertising, including a discussion on how the purchasing agent can help the advertising manager.

(*Please turn to page* 242)

# To You if you use Oil Seals

If you were talking with Chicago Rawhide engineers, you would find they make a pretty convincing case for the superiority of Perfect Oil Seals based on good, sound, generally accepted engineering principles. But let's assume that you are supercautious and inclined to discount any such evidence even though it can't be disproved.

There is one thing, however, that can't be ignored and that is this. For the last 20 years, more machines of all types throughout the world have been equipped with Perfect Oil Seals (SIRVIS LEATHER AND SIRVENE SYNTHETIC RUBBER) than with any other make. And this statement can be documented.

Granted, that fact doesn't prove that Perfect Oil Seals are the best but it does prove very definitely that the organization behind Perfect Oil Seals has a whale of a lot of satisfied customers and continues to have. That is significant.



**Our 71ST Year of Industrial Service**

OTHER C/R PRODUCTS
sirvis MECHANICAL LEATHER
SIRVENE SYNTHETIC RUBBER

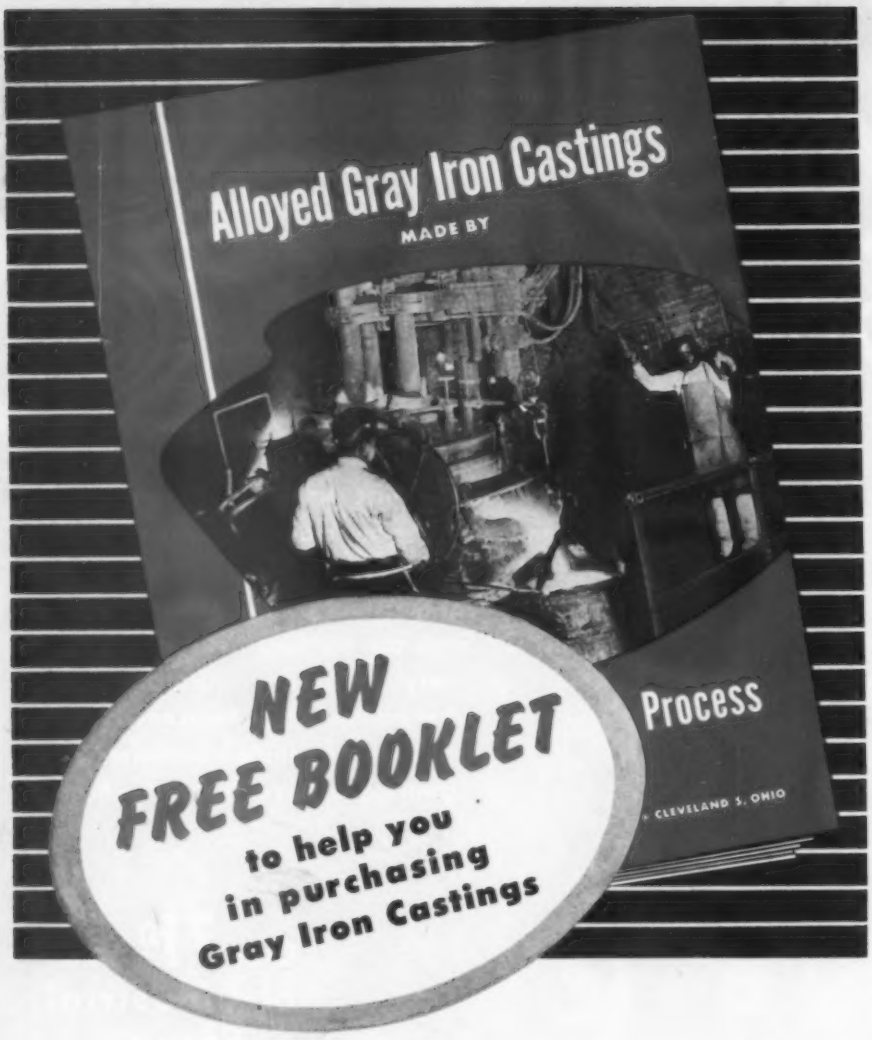
**HICAGO RAWHIDE MANUFACTURING CO.**

**1318 ELSTON AVE. CHICAGO 22, ILLINOIS**

*Manufactured and distributed in Canada by Super Oil Seal Mfg. Co., Ltd., Hamilton, Ont.*

**YORK • PHILADELPHIA • DETROIT • LOS ANGELES • CLEVELAND • BOSTON • PITTSBURGH**
**FRANCISCO • MINNEAPOLIS • CINCINNATI • HOUSTON • DENVER • SYRACUSE • PEORIA**

PERFECT Oil Seals




## Data, Facts, Tables About Electric Furnace Process

Here's the complete story about the Electric Furnace Process presented in an illustrated 8 page booklet designed especially for Purchasing Agents and Product Engineers.

Contents include Tables of Alloy Properties, results of Foundry and Customer tests of Random and Arbitration Bars, diagrams of the basic Gray Iron processes, and a description of the Electric Furnace Process.

Whether you want wear resistance, stronger iron, or anti-corrosion qualities, see how Superior Foundry's Electric Furnace Process can meet your most exacting requirements.

**SEND TODAY FOR YOUR FREE COPY**

A MUST FOR ECONOMY-MINDED PURCHASING AGENTS WHO CAN'T AFFORD TO GUESS ABOUT ALLOYED GRAY IRON QUALITY!

SUPERIOR FOUNDRY, INC., Dept. P
3542 E. 71st St., Cleveland 5, Ohio

Please send your illustrated 8 page booklet, "Alloyed Gray Iron Castings made by Electric Furnace Process."

Name _____ Title _____

Company _____

Street and No. _____

City _____ Zone _____ State _____

### TOLEDO ASSOCIATION HOLDS OWN "INFORM-A-SHOW"

The Toledo Purchasing Agents Association turned its regular meeting, held October 20 in the Toledo Yacht Club, into a small edition of the "Inform-A-Show", given by its own members.

One card table, with facilities for small motors and lights, was provided and members were invited to show merchandise or service from their companies. They were also urged to bring sales managers and salesmen to the affair "to meet and sell all of the purchasing agents". Exhibitors were permitted to bring all the circulars, samples and advertising they desired. Shopping bags were provided for souvenirs.

Beer on tap was served free of charge. The only charge for the show was $2.00 per exhibitor to cover the cost of the hall, tables, beer, and clean-up charges.

### T. A. CORCORAN VISITS MONTREAL ASSOCIATION

The October 18 meeting of the Purchasing Agents Association of Montreal was the occasion of a visit by T. A. Corcoran, president of the National Association of Purchasing Agents. The meeting was held in the Mount Royal Hotel.

Guest speaker at the September 20 meeting, also held at the Mount Royal, was W. John Sheridan, Assistant Secretary, The Canadian Chamber of Commerce. Mr. Sheridan spoke on "Danger Signals", which dealt with some of the perplexing problems faced by Canadian business, both domestic and foreign.

### NEW ORLEANS ASSN. HEARS TALK ON LABOR PROBLEMS

The regular monthly meeting of the Purchasing Agents Association of New Orleans was held on October 17, a week later than scheduled, because of the Seventh District Conference in Jacksonville, Fla., on October 10 and 11.

Charles H. Logan, president of the New Orleans Pelicans, was the principal speaker. Mr. Logan, who was secretary of the first National Labor Relations Board, and later regional director of N.L.R.B. for the southern region, spoke on "Labor Problems and How to Handle Them".

Robert Elsasser, economist, gave his usual report.

F. R. Gething, American Radiator & Standard Sanitary Corporation, is a new member of the association.

### CENTRAL ONTARIO MEETING

The first meeting of the fall and winter season of the Purchasing Agents Association of Central Ontario, on Tuesday, September 27, took the form of a plant visitation to Beatty Bros. plant in Fergus. Dinner was served in the company hall following the inspection tour.

(*Please turn to page* 244)

# These fastenings are 100 years ahead!

Blake & Johnson has spent 100 years in acquiring and applying fastening know-how in every type of production problem. Every Blake & Johnson fastening has the dependability of characteristics that only long, specialized experience can assure. That's why your feeling of security is well-founded when you use Blake & Johnson fastenings. Permanent assemblies demand time-tested fastenings. Specify Blake & Johnson fastenings—they're better by 100 years!

The production of screw machine products for unusual fastening applications is only one example of Blake & Johnson's service to metal- and wood-working industries. Large plants and small shops throughout the country know Blake & Johnson as a single source for threaded fasteners for every use and specification.





**BLAKE & JOHNSON**
*Fastenings*

*Slotted or Phillips head machine screws, wood screws, stove bolts, tapping screws, special headed products; nuts, rivets, chaplets, wire forms, screw machine products . . . in steel, stainless steel, copper, brass, bronze, everdur, nickel, nickel silver, monel, aluminum . . .*

**1849—1949**

**A CENTURY OF MANUFACTURING FASTENINGS FOR ALL INDUSTRY**

**THE BLAKE & JOHNSON COMPANY**
**WATERVILLE 14, CONNECTICUT**

---

*Please send me your new catalog containing full data on the complete line of Blake & Johnson fastenings.*

NAME

TITLE

COMPANY

P-5

ADDRESS

# "Sure, I'd wear a respirator . . .

# . . . if it was comfortable!"

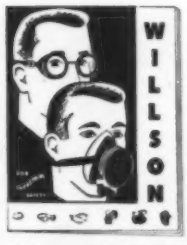




Respirator Style 45D

Respirators must fit properly and provide ease of breathing before workers stop risking their lungs—and your profits.

Protection must be combined with comfort. One without the other means a wasted investment in safety equipment. Here is a WILLSON lightweight respirator, approved by the U. S. Bureau of Mines for use in dusts and mists. It has gained wide acceptance in industry through workers' willingness to wear it. Normal breathing is assured through easily replaceable filters and a positive acting exhaust valve. The facepiece, in two sizes with adjustable wire nose spring and adjustable elastic headband, is adaptable to all face sizes.




**NEW CATALOG**

*In addition to product information, it contains information on safety glass, filter glass, respiratory hazards, etc., which will help you select proper safety equipment to meet specific hazards. Send for it!*

WILLSON

"Established 1870"

**WILLSON PRODUCTS, INC., 221 WASHINGTON STREET, READING, PENNA.**




## BUFFALO ASSOCIATION HOLDS FIRST MEETINGS OF SEASON

The first meeting of the 1949-50 season was held by the Purchasing Agents Association of Buffalo on Wednesday, September 14.

Elson Holrod, chairman of the program committee and Leon Trum, commodity chairman, introduced J. W. Stoner, R. J. Jones and D. Hibbard, of the American Brass Company. The three guests presented a color film on copper, taken at the American Brass Anaconda Montana workings. The film covered mining and smelting operations of copper. The company representatives added further explanations and answered questions from the floor following showing of the film.

Four new members were accepted at the meeting: John A. Jarrett, Artcraft Burow Company; Paul F. Braun, Meyer Equipment Corp.; C. D. Lymburner, Public Light, Heat, and Power Co.; and Leon N. Tate, Jamestown Finishing Products Co.

Bill Gamble offered a short eulogy to the memory of Wilbur C. Volk, a past president of the association, who died during the summer.

Bob Cavanaugh led a discussion on the first two of the "ten commandments" of purchasing.

### October Meeting

The most recent meeting of the association was held on Wednesday, October 12 at the Hotel Statler.

The first portion of the meeting was devoted to education, with C. Reid Collins discussing Principles and Standards of Purchasing Practice. The two principles covered were: No. 3—"To buy without prejudice, seeking to obtain the maximum ultimate value for each dollar of expenditure; and No. 4—"To strive consistently for knowledge of the material and procedures of manufacture, and to establish practical methods for the conduct of his office."

The Erie Malleable Iron Co. then presented a film entitled "This Moving World", made under the direction of the Malleable Founder's Society.

The annual "Executive Night" meeting of the association is scheduled for November 9.

## TWIN CITY ASSOCIATION SEES RESISTANCE WELDING FILMS

A meeting of the Twin City Association of Purchasing Agents was held on Wednesday, October 12, in the St. Paul Athletic Club, St. Paul, Minn.

Two movies produced by the General Electric Company were shown. The first, entitled "Resistance Welding", illustrated the basic process of this type of welding. The second film covered the welding of metal containers.

The films were followed by a commentary given by Henry D. Weed, division manager of the Weiger-Weed Company, Detroit, Mich.

(*Please turn to page* 248)




# with WHITNEY Roller Chain Drives

Delivery constant, full power from driver to driver mechanisms . . . that's one of the major advantages of using chain drives.

Deeply seated in the sprocket, Whitney Roller Chain eliminates power loss because there is no slippage or friction loss. This means that full rated horsepower is delivered . . . constant speed maintained . . . highest transmission efficiency always obtained.

In addition, Whitney Chain absorbs shock loads without breakage, assuring long operating life; while the flexibility and adaptability of chain drives simplifies design problems.

For positive power transmission specify and use Whitney Roller Chain . . . the *all steel drive*. Write for information.

**CHAIN DRIVE IS BETTER**

- Positive Grip
- Transmission of full horsepower
- High resistance to shock loads
- High load carrying capacity
- Simplifying transmission designs
- Low Maintenance
- Ease of installation
- Long operating life
- Constant uniform speeds

WHITNEY Power Line ROLLER CHAIN DRIVES

WHITNEY CHAIN & MFG. CO.
*Division of*
*Whitney-Hanson Industries Inc.*
207 Hamilton St.,
Hartford 2, Conn.

*It's an*

...



## RADIAL DRILL

**for DRILLING, TAPPING, LIGHT PROFILING**

Especially where heavy or cumbersome workpieces make it easier to spot the drill head than to spot the work. Handles all drilling and tapping up to ½" with sixteen spindle speeds from 160 to 8300 r.p.m. with a 1740 r.p.m. motor. Head tilts to 45° in either direction on a ball thrust bearing support collar; ram traverses to a maximum of 18 inches, swings through a full 360° on eight precision ball bearings.



## 20" DRILL PRESS

**SPEEDS YOUR DRILLING OPERATIONS**

The Walker-Turner 20 inch Drill Press is built for fast production drilling operations. Five speed ranges make it possible to drill a wide variety of materials. Thoroughly job-tested in large and small plants, many are operated continuously on 24 hour schedules. Accurately drills ¾" in steel, 1" in cast iron with a 6" spindle travel. Hand or power feed models with one to six spindles.

# Open Secret!

## TO SURVIVE AS A MANUFACTURER IN TODAY'S MARKET *Everyone Knows*

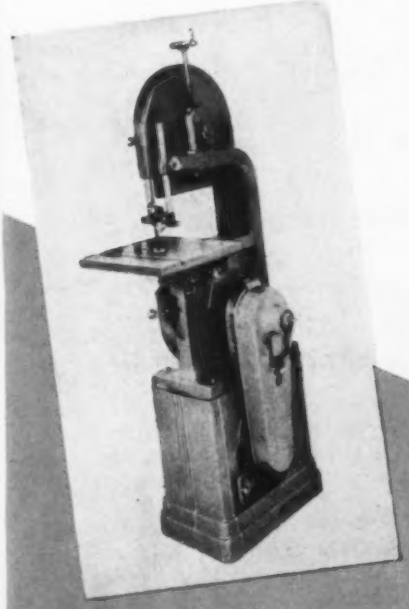
As a manufacturer you must increase the man-hour productivity of your plant, whether you employ 5 men or 5,000.

In your plant, a long step forward toward increased productivity can be taken if you buy production tools only after careful appraisal.

Begin by comparing the engineering specifications of W-T machine tools with those of other makes. Compare the cost of a Walker-Turner tool, in terms of how much it can produce for you, with the cost of other makes. Determine for yourself how much sound, job proven engineering you get for each dollar spent.

You will find, like other manufacturing men before you, that Walker-Turner machine tools are the leaders in their field because the engineering that goes into them has been soundly conceived, the material used in their construction is the best available, they perform with a minimum of maintenance, and *they are reasonably priced.*

Three of Walker-Turner's complete line of machine tools are illustrated here. For technical data on these, or any other Walker-Turner Tools, ask for a copy of the new catalog.



**14" BAND SAW**
**for METAL, WOOD AND PLASTICS**

**Cuts sheets, rods, tubes of steel, iron, aluminum, brass, alloys and compositions; molded plastics such as bakelite and catalin; and can be immediately converted into a direct-drive machine with correct speeds for woodworking.**

**Low initial cost and high operating efficiency combine to make this Band Saw an indispensable tool.**

RADIAL SAWS • BAND SAWS • DRILL PRESSES • TILTING ARBOR SAWS • JIG SAWS • TABLE SAWS • JOINTERS • LATHES • BELT AND DISC SURFACERS

walker-Turner

DIVISION
KEARNEY & TRECKER CORP.
PLAINFIELD, N. J.
U. S. A.

Meehanite®

MELTING POTS

by

Brake Shoe



A reliable and economical source of melting pots is found in castings by Brake Shoe of Meehanite metal. *Reliable* because of Brake Shoe's wide metallurgical knowledge and thorough foundry techniques that protect structural soundness and physical properties. *Economical* because of the longer life expectancy of a sound casting closely matched to its service.



In melting pots, Brake Shoe uses a type of heat-resisting Meehanite chosen to withstand constant heating, intermittent heating and cooling, flame impingement and contact with molten metals. Whether you require the type used for melting aluminum or that for melting lead or zinc, pouring type or holding type, count on these castings to resist premature cracking, warpage, growth, oxidation and corrosion.



A list of available sizes and prices will be sent you on request.

7320

American Brake Shoe Company

BRAKE SHOE AND CASTINGS DIVISION

230 PARK AVENUE, NEW YORK 17, N. Y.

## LEADING ECONOMIST GUEST AT MILWAUKEE ASSN. MEETING

The second meeting of the new year was held by the Milwaukee Association of Purchasing Agents at the Elks Club on Tuesday, October 11.

Dr. R. O. Lang, economist, of S. C. Johnson & Son, Racine, Wis., was the principal speaker, on the subject "The Weeks Ahead". Dr. Lang is an outstanding economist, having served in both national and international assignments.

More than 45 students are completing the class in purchasing at Marquette University sponsored by the association. The schedule of classes and speakers for the past four weeks, and for the first week in November, is as follows:

October 6—Gil Scully, Delta Mfg. Co., "Forms Used In Purchasing".

October 13—Jos. W. Nicholson, City of Milwaukee, open discussion.

October 13—Elmer Matzek, Supervisor of Tabulating Equipment, City Comptroller's Office, "The Use of Tabulating Equipment in Comptroller's Office".

October 20 — Bill Mett, Burlington Mills, "Purchasing Cotton Textiles and Burlap".

October 27—Wes. Budziszewski, Geo. J. Meyer Mfg. Co., "Symposium on Steel Buying".

November 3—Frank Steffen, Nordberg Mfg. Co., "Catalogues and Sources of Supply".

Text for the course is Stuart Heinritz' "Purchasing".

New members of the association are: Erwin Hellerman, Marinette Marine Corp.; Robert E. Joseph, Allis-Chalmers Mfg. Co.; Earl F. Williams, Milwaukee Gear Co.; and Frank Booth, Milwaukee Spring Co.

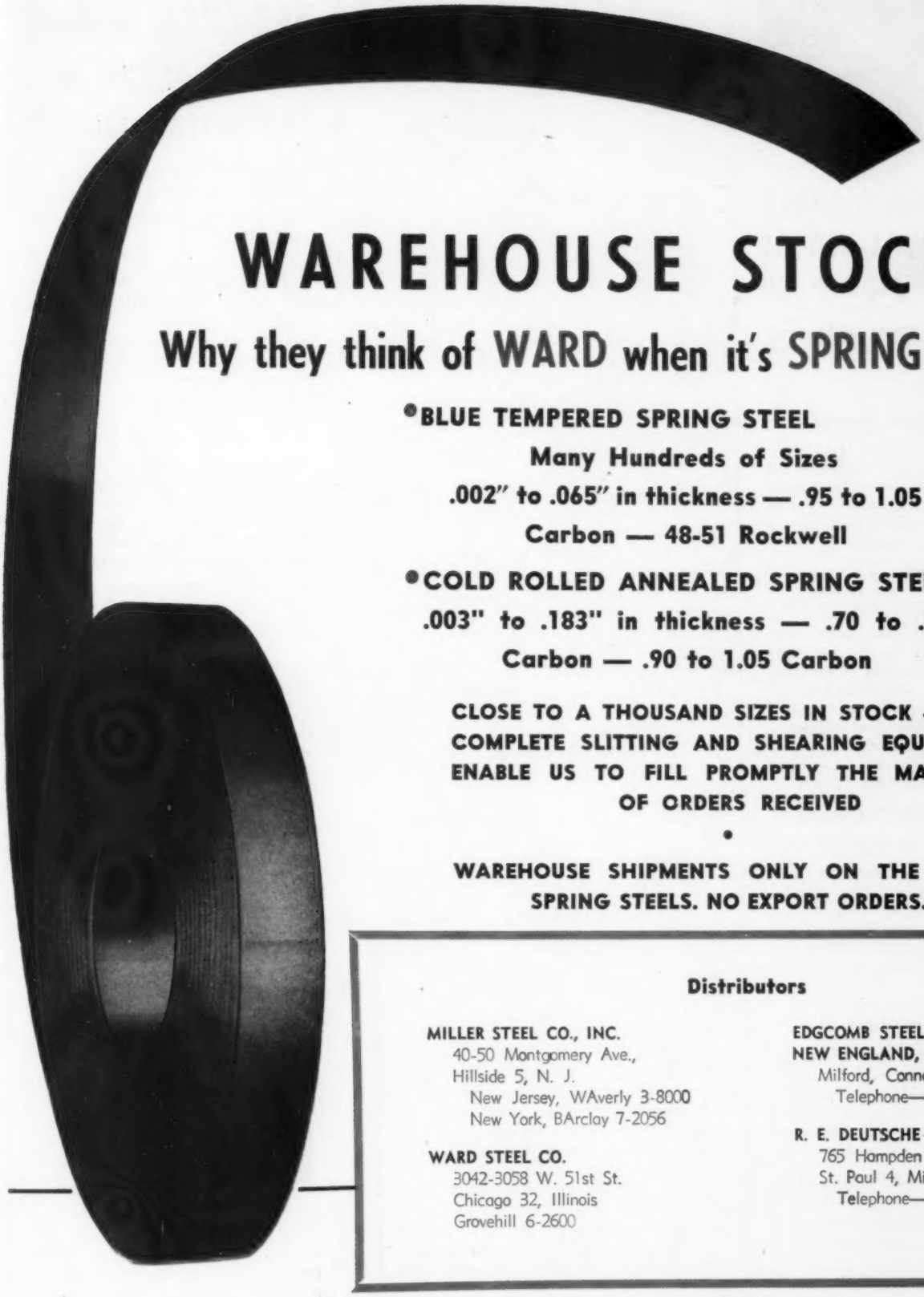
## STEEL WAREHOUSING TOPIC AT M.P.A.C. MEETING

A regular meeting of the Metropolitan Purchasers' Assistant Club was held at the Midston House, New York, N. Y., on Thursday evening, October 13.

Henry B. Williams, manager of the tubular products department of Joseph T. Ryerson & Son, Inc., was the guest speaker. Mr. Williams' subject was "Position of the Warehouse in the Steel Industry".

Through the courtesy of the Goodyear Tire & Rubber Company, two films were shown: "The Way Out", showing the use of belting in coal mining; and "The Way Over the Mountain", showing the use of belting the construction of the Anderson Dam, in Idaho. The following representatives of the company were on hand to answer questions after the showing of the pictures: M. W. Sledge, assistant engineer of the belting sales department, Akron, O.; Harold Mackin, district manager of the New York area; John Neidhardt, New York representative; and William Boyle, of the W. S. Wilson Corp., sales representatives of the Goodyear Rubber & Belt Company, Akron, O.

(*Please turn to page* 250)



# WAREHOUSE STOCK

## Why they think of WARD when it's SPRING STEEL

**•BLUE TEMPERED SPRING STEEL**

**Many Hundreds of Sizes**

**.002" to .065" in thickness — .95 to 1.05**

**Carbon — 48-51 Rockwell**

**•COLD ROLLED ANNEALED SPRING STEEL**

**.003" to .183" in thickness — .70 to .80**

**Carbon — .90 to 1.05 Carbon**

**CLOSE TO A THOUSAND SIZES IN STOCK — AND COMPLETE SLITTING AND SHEARING EQUIPMENT ENABLE US TO FILL PROMPTLY THE MAJORITY OF ORDERS RECEIVED**

•

**WAREHOUSE SHIPMENTS ONLY ON THE ABOVE SPRING STEELS. NO EXPORT ORDERS.**

**Distributors**

**MILLER STEEL CO., INC.**
40-50 Montgomery Ave.,
Hillside 5, N. J.
New Jersey, WAverly 3-8000
New York, BArclay 7-2056

**WARD STEEL CO.**
3042-3058 W. 51st St.
Chicago 32, Illinois
Grovehill 6-2600

**EDGCOMB STEEL OF NEW ENGLAND, INC.**
Milford, Connecticut
Telephone—MILford 4-1631

**R. E. DEUTSCHE**
765 Hampden Avenue
St. Paul 4, Minnesota
Telephone—NEStor 7279

**TELEPHONES**
**Boston 10, Mass., LIberty 2-2770**
**Providence, R. I., GASpee 8573**
**Chicago, Ill., Grovehill 6-2600**

# WARD STEEL CO.

**33 FARNSWORTH ST. . BOSTON 10, MASS.**


*Want Additional Product Information? See Page 19.*




**DEPENDABLE ALL-WAYS!**

**GITS**

**GRAVITY DRIP OILERS**

**OIL SUPPLY**

*. . . . you can depend on*

Gits Gravity Drip Oilers (with their generous capacities) provide oil when you want it, where you want it, and at the rate you want it. Transparent reservoir signals need for refills—even from a distance.

**OIL DELIVERY**

*. . . . you can depend on*

Sight-Feed permits easy observation of rate of oil drip. Adjustable Needle Valve provides pin point precision control of rate of oil drip, to guard against burned out bearings due to faulty lubrication. Bearing and shaft seal not subject to extreme lubrication pressures—with metered delivery, just set it and forget it.

**WORK SAVING DESIGN**

*. . . . you can depend on*

Generous capacities eliminate frequent refills. Each man can oil more machines. Positive shut-off toggle does not affect Needle Valve adjustment. Vibration proof locking nut preserves Needle Valve setting.

**DURABILITY**

*. . . . you can depend on*

Unbreakable plastic reservoir withstands severe flexing and hammer-like blows over wide range of temperatures. Leakproof bond created between plastic reservoir and heavy gauge brass base.

Gits friction fighting lubrication reduces "Down-Time" and produces uninterrupted machine performance on all types of equipment.

**STANDARD SIZES AVAILABLE FROM STOCK**

**WRITE TODAY**
*for New Descriptive Booklet*

**GITS BROS. MFG. CO.**
1865 S. Kilbourn Ave., Chicago 23, Illinois


## PHILADELPHIA ASSOCIATION HOLDS A "KNOW YOUR ASSOCIATION" MEETING

At a closed meeting held on Thursday evening, October 13, at the Bellevue-Stratford Hotel, members of the Purchasing Agents Association of Philadelphia heard a series of talks designed to acquaint them with the past, present, and potential history and accomplishments of the association. The session was designated as "Know Your Association" meeting night.

Speakers of the evening were:

Morris H. Merritt, past president of the association, whose subject was "Background of the Purchasing Agents Association of Philadelphia".

Albert W. Zackey, past president of the association, former Vice President for District 8, N.A.P.A., and former national financial officer, who spoke on "Relationship Between the Local Association and the N.A.P.A."

P. J. Clarke, first vice-president of the association, who spoke on "The Educational Program of the Philadelphia Association and its Accomplishments".

M. L. Lampe, second vice-president of the association, whose subject was "The Purchasing Agents Association of Philadelphia—An Evaluation".

Principal speaker at the forum session which preceded the main meeting was L. F. Livingston, manager, extension division, public relations department, E. I. duPont de Nemours Company, Wilmington, Del. Mr. Livingston supplemented his talk on "Progress in Better Living" with a number of exhibits.

* * *

## CAROLINAS-VIRGINIA ASSN. HOLDS FALL MEETING

The fall meeting of the Carolinas-Virginia Purchasing Agents Association was held at Poinsett Hotel, Greenville, S. C. on September 16 and 17.

Following a closed business meeting and a closed general forum on the afternoon of Friday, September 16, industry group forums were held as follows: Coal-Fuel; Furniture and Lumber; Governmental and Institutional; Paper and Containers; Textiles; Utilities. They were led respectively by H. D. Waters, P. J. Neal, A. R. McMullan, Ralph E. Bell, Jack T. Holt, and H. E. Wilson.

The banquet was held that evening, preceded by a social hour at which R. V. Spangler acted as major-domo. Principal speaker at the banquet was T. C. Sharman, British Superintending Trades Consul for South and Southwest Area, on the subject, "Economic Situation of Great Britain".

The open joint meeting on Saturday morning, September 17, was addressed by Colonel George S. Brady, materials consultant, on "Markets and Prices versus Controls and Subsidies". W. G. Haddrell presided. James Berry gave the forum analysis. The session closed with a golf and recreation period under the direction of R. V. Spangler on Saturday afternoon.

(*Please turn to page* 252)


**Are YOU the one who doesn't know**

# FEDERAL makes every type of Indicating Gage?

**Wide, continuous experience gave us the know-how to design gages that produce better quality at lower cost.**

YOU may know that Federal makes more Dial Indicators and Dial Gages than any other manufacturer. But, note this too —the entire Federal Plant is devoted exclusively to the design and production of *every type* of Indicating Precision Instrument by the latest scientific methods.

We engineer and make Automatic Sorting Gages, Signal and Automatic Control Gages, Continuous Measuring Gages in great variety to control dimensional accuracy as wanted.

We have made gaging devices for controlling the dimensions of every sort of article from wire staples to railroad splice bars, from sausage skins to jet engines; gages that do jobs people said couldn't be done.

Take advantage of the practical savings secured from these gages. The proper gage, properly applied, costs nothing. It collects money on saved scrap and eliminated operations.

For data on any of these gages write to Gaging Headquarters—Federal Products Corporation, 1106L Eddy St., Providence 1, R. I.



**ELECTRONIC-AUTOMATIC SORTING** — The ultimate in 100% gaging — fast, stable, accurate. Engineered to your product.

**FEDERAL**

**Dial Indicators • Indicating Gages Special Gages • Electronic and Automatic Sorting Gages • Air Gages**




## BEAT GALVANIC CORROSION WITH

# Alcoa Aluminum Fasteners

No weakened joints or wobbly assemblies when you fasten aluminum with Alcoa Aluminum Fasteners! They prevent the galvanic corrosion that can result when dissimilar metals are used to fasten aluminum; resist common corrosion, too—will never red rust-streak your product. Costs are surprisingly low.

Alcoa Fasteners are available from stock with Phillips head for fast power driving, or slotted heads; in sheet metal, wood and machine screws; standard threads in all popular sizes; hex head bolts and nuts; cap, castle and wing nuts; washers, solid or tubular rivets, and cotter pins.

Investigate the low cost and sales advantages of aluminum fasteners today! Write on your letterhead for free samples, specifying the types you'd like, to:

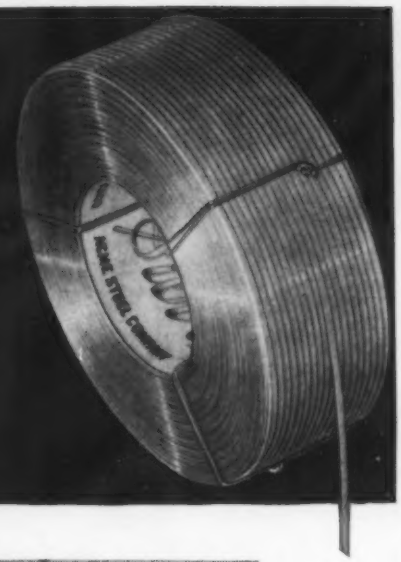
ALUMINUM COMPANY OF AMERICA, 619-L Gulf Building, Pittsburgh 19, Pennsylvania.

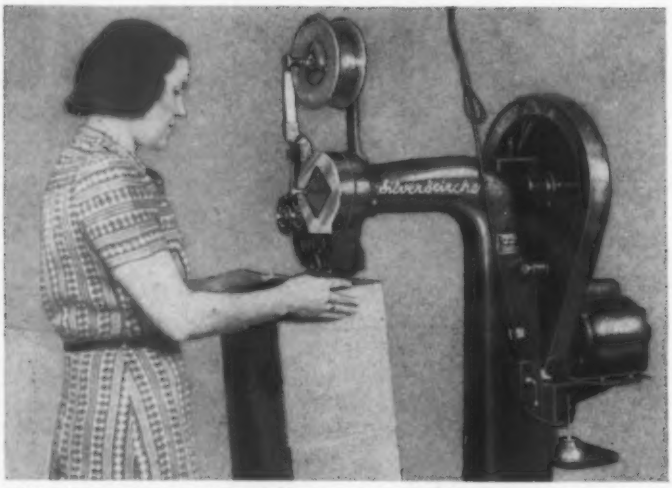
**ALCOA *Aluminum* FASTENERS**

*Other Alcoa Products:* INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS IMPACT EXTRUSIONS • ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

Carton assembly and closure costs LESS when you use an

# ACME SILVERSTITCHER





*This Acme Post-type Silverstitcher is only one of many standard models. Acme also tailors special stitching machines precisely to your needs.*

The thousands of companies who use Acme Silverstitchers and Silverstitch box-stitching wire report substantial savings of time and materials:

- **A packer of medical kits cut closure costs 81%!**
- **A maker of fluorescent lamp bulbs saved $15,000 in one year!**
- **An asphalt producer doubled his output with fewer men!**
- **A banana shipper increased production 5 times, at 1/10 former costs!**

If your product goes into corrugated or fibreboard containers, you should be able to cut packaging costs with Acme equipment and methods. The coupon below will bring an Acme Shipping Specialist to explain why . . . and how. Or ask for free booklet, "Profit by Stitching."

STITCHING WIRE DIVISION

**ACME STEEL COMPANY**

NEW YORK 17 ATLANTA CHICAGO 8 LOS ANGELES 11

ACME STEEL COMPANY, Dept. P-119
2838 Archer Avenue, Chicago 8, Illinois.

☐ Send free booklet, "*Profit by Stitching.*"
☐ Have representative call.

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

## ANNUAL CANADIAN CONFERENCE HELD IN HAMILTON OCT. 14-15

The 24th annual Canadian Purchasing Agents Conference, under the auspices of the Council of Canadian Purchasing Agents Associations, was held on October 14 and 15 at the Royal Connaught Hotel, Hamilton. The conference was arranged and conducted by the Purchasing Agents Association of Hamilton District.

A full report of the conference will be carried in the December issue of PURCHASING.

## NEW ENGLAND PURCHASING CONFERENCE HELD IN BOSTON

The 24th annual Canadian Purchasing chasing Conference, sponsored by the associations of District 9, N.A.P.A., was held in the Hotel Somerset Boston, Mass., on October 19 and 20. The New England Association of Purchasing Agents played host for the affair.

A full report of the conference will be carried in the December issue of PURCHASING.

## URGE EARLY REGISTRATION FOR DISTRICT 3 CONFERENCE

The Purchasing Agents Association of St. Louis will sponsor a Third District Conference to be held at the Jefferson Hotel, St. Louis, on January 23 and 24, 1950.

General chairman of the affair is A. W. Soell, Gaylord Container Corp., who is being assisted by the following committee chairmen; program, Paul O'Brien; advisory, L. J. Bussmann; publicity, D. M. Crimmins; hotel reservations and registration, George S. Forbes; entertainment, John L. Pratt; transportation, K. W. Guillermin; luncheon, Charles D. Hoffman. John W. Reynolds is treasurer, and Preston M. Green, Combustion Engineering-Superheater, Inc., is conference chairman. D. M. Baker is president of the St. Louis Association.

The committee is urging all association members in the district to register early, and offering to help make arrangements for doubling up where single rooms are not available. All reservations are payable in advance and should be made through G. S. Forbes, Century Electric Co., 1806 Pine St., St. Louis 3, Mo. Fee for 2-day registration is $12.00.

## "BUMP" HADLEY GUEST AT R. I. ASSOCIATION MEETING

A regular meeting of the Rhode Island Purchasing Agents Association was held at the Narragansett Hotel, Providence, R. I., on Monday, September 26.

Guest speaker was Irving D. "Bump" Hadley, one time student at Brown University, and formerly a pitcher for the New York Yankees. Mr. Hadley is now a sports broadcaster for a Boston television station.

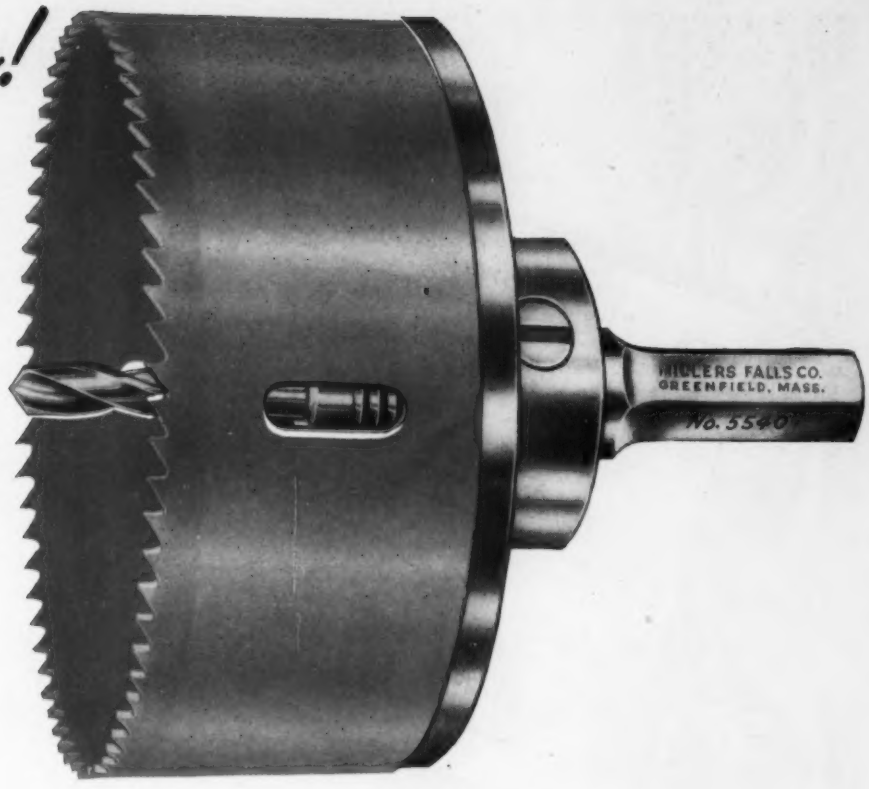
There was no commodity forum at the meeting, but there was a report on the McGill commodity charts.

(*Please turn to page* 254)

*New!*

*New!*

*New!*




*New*

## Speed big hole cutting in any machinable material with the new, Welded Edge BLU-MOL® Hole Saws

Here's a new time and money saving line of tools that are already proving their value in plant after plant. They're the gang-cutting, follow-through type Blu-Mol Hole Saws.

With specially selected High Speed Edge welded to a super tough alloy back, they easily handle any machinable material from wood to hard steel. They cut holes through solid stock up to $1\frac{1}{8}''$ thick. They can also be used on stacked material of lesser thickness or for cutting through successive partitions. And they do it faster, cheaper, more efficiently than possible by conventional methods.

Available in $\frac{1}{8}''$ steps from $\frac{5}{8}''$ to $4\frac{1}{2}''$, the new Blu-Mol Hole Saws can be driven by any portable power tool, radial drill, lathe or drill press with $\frac{1}{2}''$ or larger chuck.

Write today for a FREE demonstration of these high performance tools that are already effecting tremendous savings for many companies.

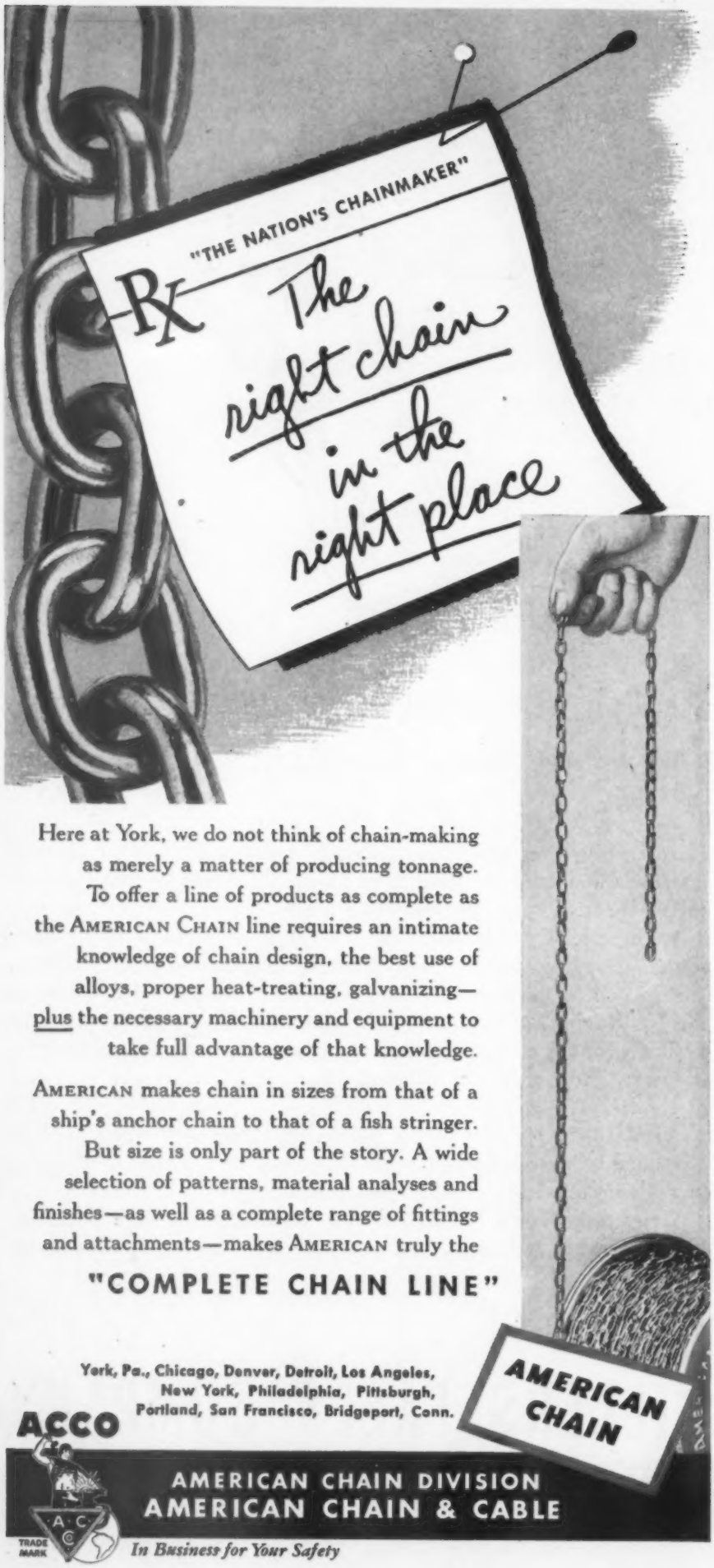
**10 OTHER GOOD REASONS TO STANDARDIZE ON MILLERS FALLS**

Standard Steel Hand Blades — "Tuf-Flex®" Special Alloy Hand Blades—"Blu-Flex®" High Speed Hand — "Blu-Mol®" High Speed Hand and Power—"Double-Life®" High Speed Double Edge Power — Tungsten High Speed Hand and Power — "Jet-Edge®" High Speed Welded Edge Power — Metal Cutting Band Saws—High Speed Hole Saws — "Blu-Mol®" Tensiometer.

# MILLERS FALLS COMPANY

MILLERS FALLS TOOLS SINCE 1868

GREENFIELD, MASSACHUSETTS




Here at York, we do not think of chain-making as merely a matter of producing tonnage. To offer a line of products as complete as the AMERICAN CHAIN line requires an intimate knowledge of chain design, the best use of alloys, proper heat-treating, galvanizing—plus the necessary machinery and equipment to take full advantage of that knowledge.

AMERICAN makes chain in sizes from that of a ship's anchor chain to that of a fish stringer. But size is only part of the story. A wide selection of patterns, material analyses and finishes—as well as a complete range of fittings and attachments—makes AMERICAN truly the

**"COMPLETE CHAIN LINE"**

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

ACCO

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

*In Business for Your Safety*

## WISCONSIN CHAPTER N.I.G.P. MEETS AT KENOSHA

The third quarterly meeting of the Wisconsin Chapter of the National Institute of Government Purchasing, Inc., was held in the council chamber of the city hall at Kenosha, Wis. on Sept. 16th. The members of the group were the guests of Joe Duffy, Kenosha city purchasing agent.

As the date of the annual convention of the parent association—NIGP—was scheduled at a date so close to the meeting, it was decided to permit some of the major problems to lay over, as many of the same subjects might come up for discussion at the national convention.

The matter of getting approval on proofs for the printing of municipal forms, etc., was discussed, as it developed that many proofs are approved tentatively by assistants, and later, after the printed matter is delivered, the department head sees the necessity for certain changes. For this reason it was decided that the responsible head of every department ordering printed matter, be required to give his O.K. to the subject matter and form of such printed proof, whether it is a complicated form or a simple piece of printing. This was found necessary to avoid waste, as reprinting has been found necessary in some cases where changes were required in the copy.

Purchasing agent Duffy took the members through the warehouse of the city, showing how inventories are taken and stock kept up.

It was decided to hold the next meeting in Madison, Wis., on Dec. 9.

## DALLAS ASSN. MEETING

A regular meeting of the Purchasing Agents Association of Dallas was held in the Melrose Hotel on Thursday, September 22. Feature of the meeting was a film called "Trouble Lurks Below". The film showed the unusual procedure of combating a wild oil well on fire with the aid of a directionally drilled well.

## TWO FILMS SHOWN AT FIRST BRITISH COLUMBIA MEETING

The 1949-50 season of Purchasing Agents Association of British Columbia was launched on Tuesday, September 13, in the Hotel Vancouver, Vancouver, B. C.

Two films, "Nickel Tales", a story of our dependence on nickel in industrial and private life; and "Portrait of a City", showing the history of Hamilton, Ont., were presented by Hugh McCaughey, Benograph Co. Ltd.

Harris Mitchell, editor of the association's new magazine, "Purchasing in Western Canada" gave a number of highlights of the new venture.

The educational committee has reported that it is again sponsoring the course in purchasing conducted by the University

(*Please turn to page* 256)

# Now.. a Better Buy on Soda-Acid and Foam FIRE EXTINGUISHERS




The 2½ Gallon
Silver-lite 500
Soda-Acid Extinguisher

**New Fyr-Fyter STAINLESS STEEL Models Offer Big Savings . . . *yet are 4 ways finer . . .***

You Get More But Pay No More When You Specify Fyr-Fyter *Stainless Steel* Fire Extinguishers.

Known as the *Silver-lite 500* series, these Fyr-Fyter extinguishers are now being manufactured at a considerable savings due to new, modern production methods. The savings are being passed on to users of Soda-Acid and Foam extinguishers.

Fyr-Fyter will now sell you Soda-Acid or Foam fire extinguishers at as low a price as any manufacturer.

Furthermore, you get more for your money. These new models are stronger, lighter and offer more resistance to damage than conventional makes. And they add beauty to your premises without extra cost to you. Their long-lasting luster is easy on the eyes just as the price is easy on the budget.

Specify Fyr-Fyter Stainless Steel . . . And Save. Write for full details and prices.

***The Fyr-Fyter-Co., 212 Crane St., Dayton, Ohio***





**5 POUNDS LIGHTER**
Use of stainless steel has produced important weight savings, making the unit easier to lift.



**EXTRA STRENGTH**
The extinguishers carry the Underwriters' 500 lb. test label instead of minimum 350-lb. label.



**DENT RESISTANCE**
The Fyr-Fyter stainless steel extinguishers are more resistant to knocks, bumps, and impacts.



**LASTING BEAUTY**
The polished stainless steel finish retains its lasting luster indefinitely. No tarnishing.

**Approved by the Underwriters' and Factory Mutual Laboratories**

Fyr-Fyter

Fyr-Fyter FIRE EXTINGUISHERS

*Stainless Steel Extinguishers*

The Fyr-Fyter Company, 252 Crane St., Dayton, Ohio

*Please send me full details and prices on your new Stainless Steel foam and soda-acid extinguishers.*

Name_____

Title_____

Street_____

City_____ Zone___ State_____

# ALLIGATOR®
## BELT LACING
### Every Tooth a Vise*





★ For Transmission and Conveyor Belting of all kinds. Excellent for Package Conveyors.
★ Separable and smooth on both sides.
★ 12 Sizes: For belts from 1/16" to 5/8" thick—and *any width.*
★ Made of Steel, "Monel", "Everdur".

*Order From Your Supply House*

**FLEXIBLE STEEL LACING COMPANY**
4697 Lexington Street, Chicago 44, Illinois



JUST A HAMMER TO APPLY IT



**FOOL-PROOF IDENTIFICATION!**
**QUICKER INVENTORY! SAFER DELIVERY!**
**FASTER SALES!**

WITH
PERMANENT • WATERPROOF
# STAONAL®




There's a special Staonal Crayon for every kind of surface and every marking or checking purpose.

**PAPER • WOOD • GLASS • METAL**
**CHINA • TIN • LEATHER • RUBBER**
**WET LUMBER • DRY LUMBER • FABRICS**
**CELLOPHANE • STONE • LIVESTOCK**

Staonal Crayons are indelible and waterproof or removable, as required. Available in a wide variety of colors, including black and white, they are created to meet industry's most exacting needs.

**BINNEY & SMITH CO.**
41 East 42nd Street
New York 17, N. Y.

*SEND TODAY*
for FREE catalog of industrial crayons to Dept. P49


(*Continued from page* 254)

of British Columbia Extension Department, which was successful in its initial effort last year. The regular monthly educational meeting will also be continued, using the visual educational course sponsored by the national association.

### VICTORIA BRANCH MEETS

The first meeting of the season of the Victoria Branch was held at the Union Club.

Feature of the meeting was the presentation of a program dealing with "General Cataloging Procedure", under the direction of chairman Gerry Sharpe, City of Victoria. Jack Woodley, B. C. Electric, gave a description of the catalog filing system used by his company.

George Lindsay announced at the meeting that consideration was being given to the suggestion that a course in purchasing be included in a list of subjects to be given next year at the Victoria College evening classes.

## DAYTON ASSOCIATION VISITS FRIGIDAIRE PLANT

Members of the Purchasing Agents Association of Dayton visited the Moraine City plant of the Frigidaire Division, General Motors Corporation, on October 13. The visit was arranged by Tony Ruediger, program chairman. Wives of members were also invited to the affair.

President Paul Boorom has appointed the following committee chairmen for the coming year: program—A. G. Ruediger; membership—C. R. Kelly; education—T. R. Thompson; picnic and golf—E. S. Hack; ladies' party—L. R. Jacobs; publicity—E. K. Griest; Cincinnati Purchasor advertising—E. G. Sander; convention—M. L. Brower; badges—H. L. Williams.

Albert O. Leckey, Monarch Machine Tool Company, who was recently elected second vice-president, has resigned from the association, owing to a change in position.

## FINANCIAL STATEMENTS TOPIC AT YOUNGSTOWN MEETING

A regular meeting of the Youngstown District Purchasing Agents Association was held on Tuesday, September 27 at the Youngstown Club.

Dr. Robert Miller, Dean of Administration, Youngstown College, was the principal speaker, on the subject "How A Purchasing Agent Should Interpret Financial Statements".

## KALAMAZOO ASSN. MEETS

The Purchasing Agents Association of Kalamazoo held a noon luncheon meeting on September 22, at the Columbia Hotel. Featured speaker was Clifford Smith, Westinghouse Electric Corporation, who showed a colored film entitled "Radio Frequency Heating: Theory and Industrial Applications". Leslie M. Hart was chairman of the meeting.

(*Please turn to page* 258)




# PUSH... and electrical service is restored with BullDog *Pushmatic*

THAT'S ALL there is to it! A simple push of the finger makes or breaks the circuit. No resetting manually when the circuit is broken by short or overload. Just PUSH —and service is restored.

*Pushmatic* is compact, sturdy, simple . . . the most versatile and flexible unit available today. It will meet every new or changing load condition.

And *Pushmatic* units are easy to install! There are no complicated group mountings . . . individual single-pole units make additions and changes a simple matter.

There are four types of *Pushmatics:* THERMAL ONLY, THERMAL-MAGNETIC, or either of these types with AMBIENT COMPENSATING FEATURES. All are identical in size and contour, in ratings of 15, 20, 30, 40, and 50 amperes, 120 V., 1 pole, or 120-240 V., 2 poles, AC. All are interchangeable for rating and type.

Write today for *Pushmatic* Bulletin #493. This descriptive bulletin contains complete information and prices on BullDog Electri-Centers and the new *Pushmatic.*

## Only *Pushmatic* Electri-Centers provide push-button control, automatic protection!

REVOLUTIONARY, new *Pushmatic* ELECTRI-CENTERS provide electrical control centers that are the last word in efficiency and protection.

They are attractive, compact, simple . . . easy to wire. There's plenty of gutter room even in the smallest cabinets.

With Electri-Centers there are no fuses to buy, no complicated operations or installation techniques to remember. You get versatility and adaptability, ease of installation and operation *never before obtainable in any panelboard.*

See the new ELECTRI-CENTERS at first opportunity, or write today for *Pushmatic* Bulletin #493.

**BULLDOG ELECTRIC PRODUCTS COMPANY**

DETROIT 32, MICHIGAN — FIELD OFFICES IN ALL PRINCIPAL CITIES

IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO

**BULL DOG**

**HEADQUARTERS FOR ELECTRICAL DISTRIBUTION**



*Want Additional Product Information? See Page 19.*

THERE'S A **RIGHT** LOCK NUT FOR YOUR JOB!

**Chances are four out of five it's An-cor-lox. Check these advantages!**

Can't shake loose
Not affected by sawed-off or drilled bolts
Can be re-used many times
Locking ring on bottom, uses short stud
Uses standard wrenches
Won't damage bolt or work
Competitively priced
Spins on stud by hand
Locking ring forms a pressure seal
Not affected by temperature
Choice of finishes for corrosive or severe atmospheric conditions

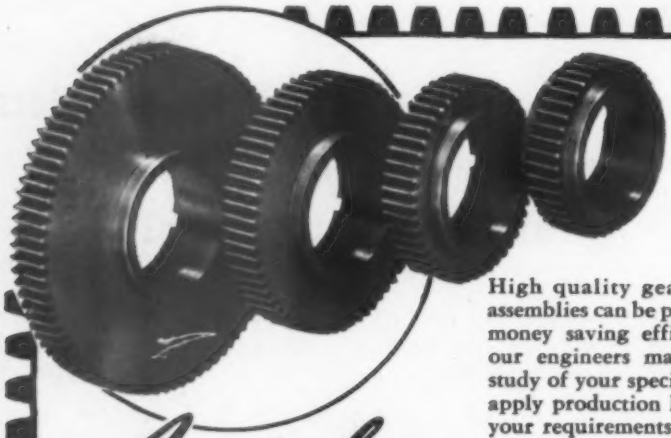


Get the right lock nut! We strongly urge a careful testing and will be glad to have our engineers check special applications. Send today for our descriptive folder or free standard samples to fit your particular needs.

**An-cor-lox** TRADE MARK REGISTERED *Lock Nuts*

LAMINATED SHIM CO., Inc., *An-cor-lox Division*, 2411 Union St., Glenbrook, Conn.

AN-COR-LOX NUTS • SHIMS • SHIM STOCK • STAMPINGS



*A priceless backlog of experience*

High quality gears and gear assemblies can be produced with money saving efficiency when our engineers make a careful study of your specifications and apply production know-how to your requirements.

Most of the executive personnel and shop machine operators at Amgears have a backlog of many years of experience in gear manufacturing and metallurgy, and a thorough knowledge of cost saving methods.

Your gear production is in good hands at Amgears.

Write now for your copy of Amgears Case Histories of particular interest to designing engineers and purchasing executives.

AMGEARS, INC. 6633 W. 65th St.
Chicago 38, Ill. Phone: Portsmouth 7-2100

AMGEARS, INC. CHICAGO
A SUBSIDIARY OF HUPP CORPORATION
CONTRACT MANUFACTURERS
Detroit • Cleveland • Chicago

## SENSING SPEAKER AT CHATTANOOGA MEETING

A regular monthly meeting of the Purchasing Agents Association of Chattanooga was held on Tuesday, September 13, at the Hotel Patten.

Guest speaker was Thurman Sensing, director of research for the Southern States Industrial Council, Nashville, Tenn., whose topic was "Lessons to be Learned from Great Britain".

## ABRASIVE WHEELS SUBJECT AT CONNECTICUT ASSN.

A regular meeting of the Purchasing Agents Association of Connecticut was held at the Waterbury Country Club, Waterbury, on September 27.

Harrison Fuller, president of the Fuller-Merriam Company, gave an educational and interesting talk on the manufacturing processes of abrasive wheels. President Ray Bingham, International Silver Company, presided at the meeting, which drew 125 members and guests.

## ALABAMA ASSOCIATION HEARS TALK ON ATTRACTING TOURISTS

A regular meeting of the Purchasing Agents Association of Alabama was held at the Thomas Jefferson Hotel, Birmingham, on September 22.

Guest speaker was W. B. Timmons, secretary and manager of the Alabama Motor Association. Mr. Timmons' subject was "Tourists: Why We Want Them, and How to Get Them".

## DEVALUATION AND INTRADEPARTMENT TRAINING, NEW YORK MEETING

More than 100 members of the Purchasing Agents Association of New York attended the association's monthly Forum meeting, at which R. L. Van Cleve, Director of Purchases, Carnegie-Illinois Steel Corporation, Cleveland, Ohio, presented a highly interesting paper on "Intradepartment Training of Personnel —How it Can be Used in a 250-man Organization." Following Mr. Van Cleve's talk, there was much active discussion of the subject from the floor.

At the dinner meeting which followed, the 352nd, the guest speaker was Secretary-Treasurer George A. Renard of the N. A. P. A., whose address "From One P. A. to Another" covered a down-to-earth talk on currency devaluation.

Twenty new members were introduced by President G. W. Howard Ahl, who announced that 39 members attended the "How to Buy" course being sponsored by the association, which opened at the Hotel Gotham, New York, on October 3rd. This course on "How to Buy Paper and Board Containers" consists of seven sessions. Time is allotted for discussion at each session. The course was planned by the educational committee of the association under the chairmanship of George Z. Turadian.

(*Please turn to page* 261)



## IT STILL TAKES ACORNS . . .

### TO PRODUCE MORE MIGHTY OAKS OF AMERICAN INDUSTRY

**In the past 45 years Doehler-Jarvis has grown from acorn size to the largest company in the die casting industry.**

**We know from experience all the difficulties on the road to the top. And we fully realize that this process of industrial growth, from acorn to oak, must continue if we and all enterprise are to prosper.**

**Therefore, we at Doehler-Jarvis are constantly on the lookout for little "acorn" companies which need help to grow. We can be of great assistance to them with our die casting process to eliminate heavy investments and, at the same time, reduce costs by converting from more complex and expensive methods.**

**Having already helped many of our smaller customers prosper and grow, we are anxious to help others the same way.**

**No matter how small your operations, our engineers, technicians and experienced business executives will be glad to discuss your production problems with you.**

# DOEHLER-JARVIS CORPORATION

*The World's Largest Producer and Finisher of Die Castings*

*Executive Office:* **386 FOURTH AVENUE · NEW YORK 16, N. Y.**

when you need information

ON GREASE FITTINGS

ON GREASE GUNS

ON CENTRALIZED LUBRICATION SYSTEMS




TURN TO

• • • PIONEER BUILDERS LINCOLN LUBRICATING EQUIPMENT • • •

CATALOG IN

SWEET'S

The new Lincoln Catalog containing complete information on Grease Fittings, Grease Guns and Centralized Lubrication Systems appears, for your convenience, in three Sweet's Files: Product Designers, Mechanical Industries, and Process Industries. Refer to it and enlist the aid of your local Lincoln Distributor or your nearby Lincoln Sales and Service Office.

A PERSONAL COPY OF THIS NEW LINCOLN CATALOG IS AVAILABLE TO YOU—

SEND COUPON!

SEE OUR CATALOG IN SWEET'S

-17

Lincoln Engineering Co.
5783 Natural Bridge Ave.
St. Louis 20, Mo.

Please send me a copy of your NEW SWEET'S CATALOG.

Name..... Title.....

Firm Name.....

Address.....

City..... Zone..... State.....

**SALES AND SERVICE OFFICES**

BOSTON — *H. G. Davis, Inc. — Kenmore 6-5176*
BRIDGEPORT — *H. G. Davis, Inc. — Bridgeport 5-8160*
CHICAGO — *Lincoln Engineering Co. of Ill. — Calumet 5-6022*
CLEVELAND — *Lincoln Lubricating Systems, Inc. — Express 4334*
DETROIT — *Lincoln Engineering Co. — Madison 3484*
EAST ORANGE — *Lincoln Lubricating Systems, Inc. — Orange 3-3188*
FORT WORTH — *Fritz Keller — 7-7211*
LOS ANGELES — *Lincoln Engineering Co. of Calif. — Richmond 0151*
MILWAUKEE — *Lincoln Equipment Service — Division 1191*
NEW YORK — *Lincoln Lubricating Systems, Inc. — Trafalgar 7-7900*
OAKLAND — *Lincoln Engineering Co. of Calif. — Higate 6130*
PHILADELPHIA — *Lincoln Engineering Co. — Locust 4-3877*
PITTSBURGH — *Lincoln Engineering Co. — Montrose 1444*
PORTLAND — *Pioneer Equipment Co. — Lancaster 0488*

• • • PIONEER BUILDERS LINCOLN SAINT LOUIS LUBRICATING EQUIPMENT • • •

LINCOLN ENGINEERING COMPANY • 5783 Natural Bridge Ave., St. Louis 20, Mo.

## EAST TENNESSEE PURCHASING AGENTS ASSOCIATION ORGANIZED

Organized to embrace the East Tennessee area, the new East Tennessee Purchasing Agents Association now has members at Knoxville, Oakridge, Clinton, Lake City, Mascot, Maryville and Alcoa. The association is headed by President W. S. Willis, C. M. McClung Co., Knoxville; Vice President R. N. Reams, Carbon & Carbide Corp., Knoxville; Treasurer C. L. Strange, Knoxville Utilities Board; Secretary F. B. Fair, Standard Knitting Mills, Knoxville, and already has a roster of 44 members. George L. Hendrickson of the Fulton Sylphon Company, Knoxville, is national director.

## RUST FORMATION ON 18-8 STAINLESS STEEL

The popular conception that rust can never form on 18-8 stainless steel unless something is wrong with the chemical composition of the heat treatment, is a long way from the truth, states Chief Chemist and Metallurgist Norman S. Mott of the Cooper Alloy Foundry Co., Hillside, N. J., in the company's publication "Newscast".

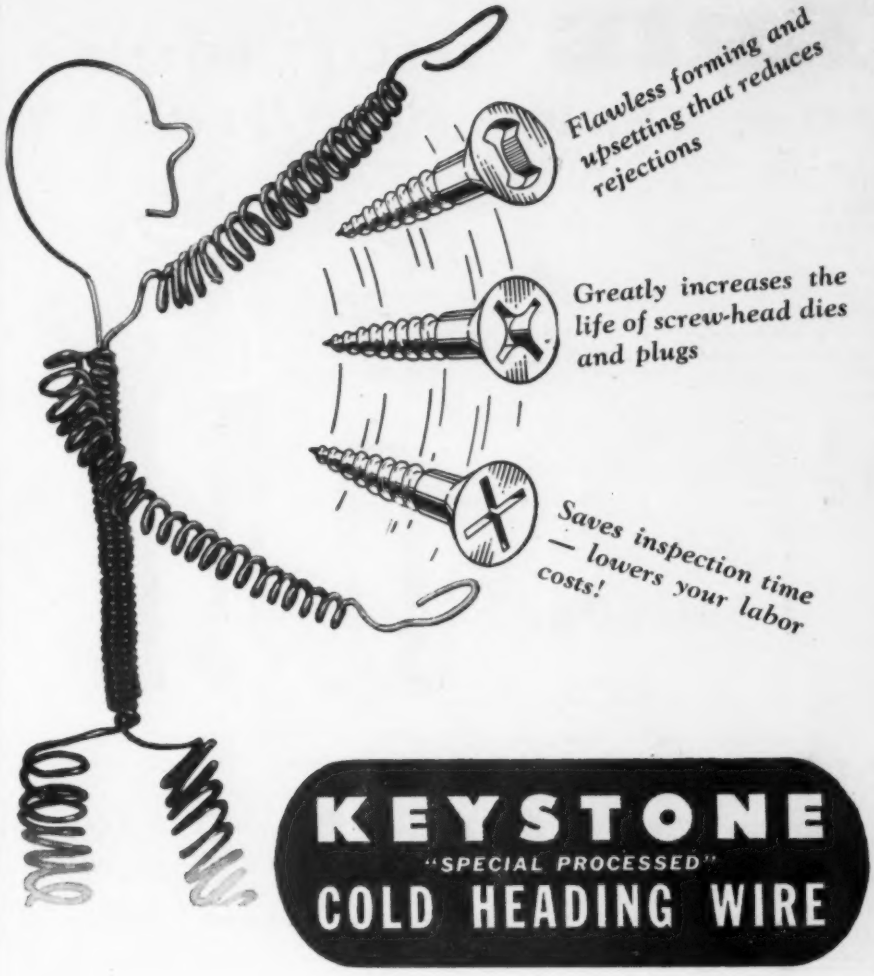
Experience has shown that rust can occur on stainless alloys of controlled composition and heat treatment as the result of surface contamination. Among the many sources of contamination which may contribute to the formation of rust on the surface of stainless steels, the following are leading offenders:

1. An iron film left on the surface as the result of a machining or other manufacturing operation will tend to rust in the presence of moisture.
2. Microscopic scale particles left on the surface after pickling may become visible as "rust" under suitable conditions.
3. Pickling solution oozing from minute pores in the metal may stain the surface and oxidize to a brown rust color due to the iron which it contains.
4. The accumulation of the natural corrosion products of the alloy in corrosive service on a rough surface may cause a brown stain due to oxidation.
5. Discoloration may be caused by the accumulation of any extraneous processing material which is of such a nature as to cause a "rusty" appearance on a rough surface.

Articles that are to have a truly "stainless" appearance should have all scale completely removed by suitable cleaning methods, should be passivated after machining operations in warm dilute nitric acid, should be free from porosity, and should have a reasonably smooth surface.

A smooth or polished surface will always stay cleaner and brighter, and be more resistant under mildly corrosive conditions than a rough surface and this tendency increases with the degree of polish. Although it is true that stainless steel is at its best when highly polished, it should be remembered that under

(*Please turn to page 262*)


For recessed heads, Keystone's new special-process wire delivers the desired upsetting and die forming qualities with such a high degree of uniformity that finished product rejections are practically eliminated . . . individual inspection of screws is no longer necessary . . . die and plug life are often more than doubled. This new wire effects considerable savings in the production of Phillips head, clutch head and cross recessed head screws.

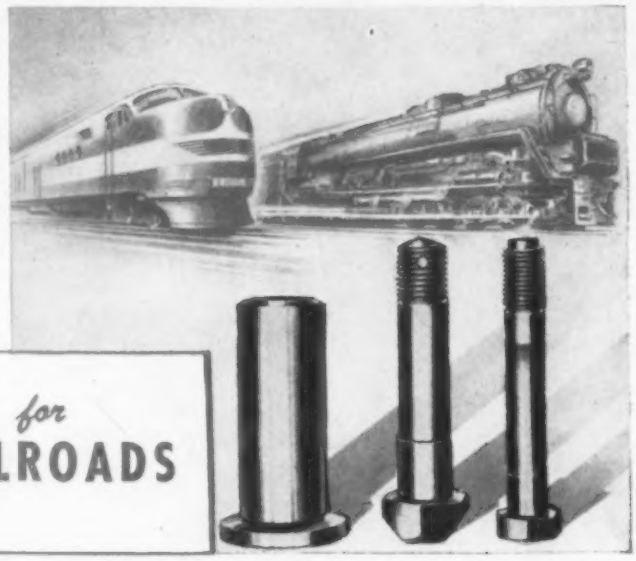
Keystone is prepared to help solve any of your industrial wire problems. If special treatment is called for, Keystone's metallurgical research and testing facilities are available to supply the answers. We welcome your inquiry.

**KEYSTONE**
**STEEL & WIRE CO.**
**PEORIA . . . ILLINOIS**

*Special Analysis Wire, Setting New Standards of Performance*

ERIE SPECIAL BOLTING
FOR HEAVY MACHINERY

FOR over 30 years ERIE has specialized in the manufacture of *high quality bolting*. We use the very latest equipment for heat treating, machining, grinding and threading. We are certain that we can produce better bolting at a saving to you because we are specialists — send us your bolting specification for our estimate



for RAILROADS

*A DEPENDABLE SOURCE OF HIGH QUALITY BOLTING FOR RAILROADS, REFINERIES, DIESELS, FARM MACHINERY, EXCAVATING EQUIPMENT AND ALL TYPES OF HEAVY MACHINERY.*

ERIE BOLT & NUT CO.
ERIE, PA.

A SUBSIDIARY OF Barium STEEL CORPORATION Steelwright to the Nation

STUDS • BOLTS • NUTS ~ ~ ALLOYS • STAINLESS • CARBON • BRONZE
Representation in Principal Cities

YOU'LL FIND CHEMICALS FOR EVERYTHING FROM FERTILIZERS TO PHARMACEUTICALS IN

O P D

- The whole week's round-up of Chemical News
- 5000-6000 Quotations
- 2957 Pages of Chemicals Advertising last year

News forms close 4 P.M. Friday
Paper delivered 9 A.M. Monday

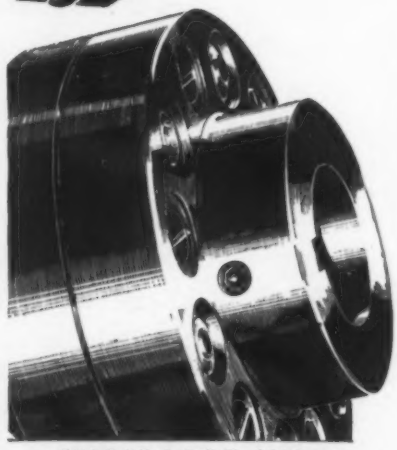
May we send you a sample copy of O.P.D.?

ABC
Oil, Paint and Drug Reporter

*For Chemical Buyers*
*The Market Authority since 1871*
SCHNELL PUBLISHING CO., INC.
59 John Street, New York 7

• Cleveland 22 — H. G. Seed, 17717 Lomond Blvd., Long. 0544 • Los Angeles 14 — The Robt. W. Walker Co., 684 S. Lafayette Park Pl. Drexel 4338 • San Francisco 4 — The Robt. W. Walker Co., 68 Post Street, SUtter 1-3568.

AJAX FLEXIBLE COUPLINGS



AVAILABLE WITH NEOPRENE BUSHINGS

Uninterrupted performance assured on installations involving liquid or air-borne chemicals, oils and other difficult conditions. Write for complete information.

AJAX FLEXIBLE COUPLING CO. INC.
13 ENGLISH ST., WESTFIELD, N.Y.

(*Continued from page 261*)

strongly corrosive conditions this polish is soon removed. For most applications, it is the inherent resistance of the alloy that counts and "rust" conditions such as those described are relatively harmless. They are the results of surface contamination and in no way reflect the composition of the alloy or the effectiveness of the heat treatment.

## GAS TURBINES FOR AUTOS TO BE CHEAPER THAN PRESENT RECIPROCATING ENGINES

Gas turbines now on the way for automobiles will be cheaper, smaller and lighter than the present auto engine, a University of Michigan professor told The American Society of Mechanical Engineers at Erie, Pa. meeting. The professor, Frank L. Schwartz, of the university's Department of Mechanical Engineering, said other advantages of the automotive gas turbine will be: fewer moving parts, low oil consumption, no need for anti-freeze, smooth operation, elimination of automatic transmissions and ability to use low grade fuels, i.e., fuels that do not require a high degree of refining.

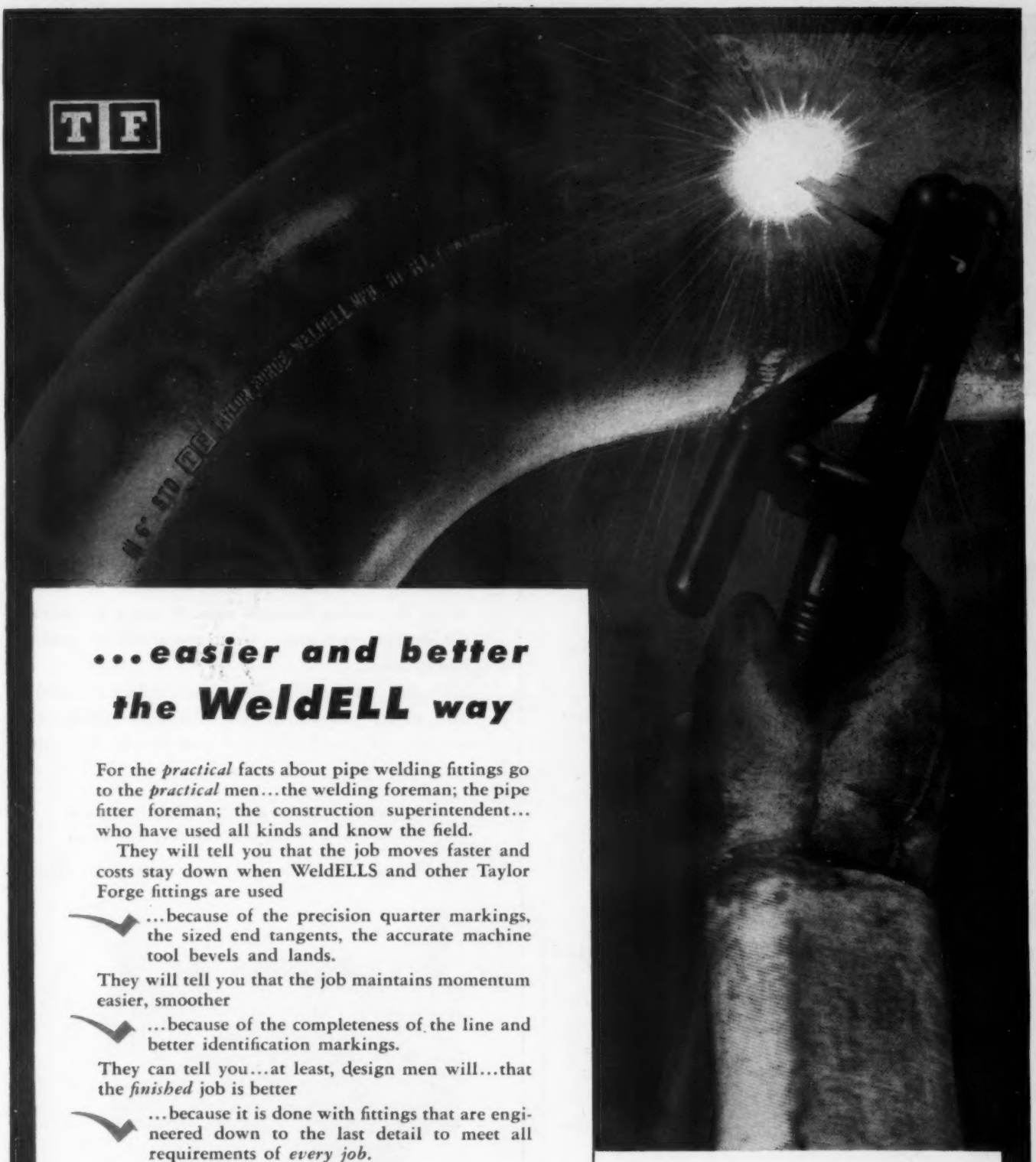
Prof. Schwartz revealed that although no announcement has been made of an automotive gas turbine in the United States, several companies have designed and built small gas turbines. The Boeing gas turbine is a 200 horsepower unit weighing 150 lbs., said Prof. Schwartz. Recently, he said, the U. S. Department of Commerce announced the development of an automobile propelled by a gas turbine in Czechoslovakia having from 60 to 80 horsepower and designed to burn naphtha, coal gas, hydrogen, acetylene, butane or gasoline. Two automotive gas turbines in England have been under development for several years, he said.

"Gas turbines can effect a 50 percent saving in weight of the engine," said Prof. Schwartz. "A saving in one lb. of engine is accompanied by the saving of another pound in chassis weight so that material saving in weight and cost of vehicle is realized."

He said the gas turbine uses about seven times more air through the machine than does an equivalent reciprocating engine. "Therefore, there is seven times as much exhaust gas," he said. "However, the exhaust gas from the gas turbine is cooler than the exhaust gas from a reciprocating engine and this is especially true if a regenerator is used. Including the air requirements for engine cooling of reciprocating engines, the air requirements for the two types of engines are about equal. Hot gas flowing from the rear of a gas-turbine-propelled vehicle is no different from that of a conventional automobile.

"It is difficult to visualize a more complicated propulsion device than a reciprocating engine in which energy from fuel is converted into mechanical work through the effort of pistons, valves, crankshaft and flywheel, then used to

(*Please turn to page 265*)



T F

## ...easier and better the WeldELL way

For the *practical* facts about pipe welding fittings go to the *practical* men...the welding foreman; the pipe fitter foreman; the construction superintendent... who have used all kinds and know the field.

They will tell you that the job moves faster and costs stay down when WeldELLS and other Taylor Forge fittings are used

...because of the precision quarter markings, the sized end tangents, the accurate machine tool bevels and lands.

They will tell you that the job maintains momentum easier, smoother

...because of the completeness of the line and better identification markings.

They can tell you...at least, design men will...that the *finished* job is better

...because it is done with fittings that are engineered down to the last detail to meet all requirements of *every job.*

Yes, "WeldELLS have everything"...to make it *easier ...better.* Coupon brings lots of facts.

# TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS • *General Offices & Works:* Chicago 90, Ill. (P.O. Box 485). *Eastern Plant:* Carnegie, Pa. *Western Plant:* Fontana, Calif. *District Offices:* New York: 50 Church Street. Philadelphia: Broad Street Station Bldg. Pittsburgh: First National Bank Bldg. Chicago District Sales: 208 S. LaSalle Street. Houston: City National Bank Bldg. Los Angeles: Subway Terminal Bldg.

Please send a copy of your new welding fittings and forged steel flange catalog 484

Name_____

Position_____

Company _____

Street Address_____

City_____ Zone____ State_____

*Mail to Taylor Forge & Pipe Works*
*P.O. Box 485, Chicago 90, Ill.*

517-1149




Better-looking packages are a business asset. They bring prestige, customer approval. You can profitably improve the appearance of your packages by sealing them with Blue Ribbon Superstandard Gummed Tape.

1. Blue Ribbon's *adhesive* never peels or blisters. It is *Supple-ized* to follow contours and corners smoothly.
2. Blue Ribbon's *kraft* is a distinctive golden brown which dresses up your parcels. Also available in eight other bright colors.
3. Your own *message* printed on Blue Ribbon gains extra attention for your parcels—identifies your goods to everyone. Aids faster shipment through preferential handling. Stops undetected pilfering from your shipments, too.

SEAL IT RIGHT WITH GUMMED TAPE

## *Check these Blue Ribbon advantages*




- ✔ Stronger long-fiber kraft
- ✔ Super fast-acting adhesive
- ✔ Supple-ized for flexibility
- ✔ Packaged in convenient cartons
- ✔ Protected by moisture-proof bag
- ✔ Clean, wholesome odor
- ✔ Available in bright colors
- ✔ Available printed with your trademark or sales message




***Write today*** for your free copy of this helpful booklet and the name of your nearest Blue Ribbon distributor. Ask for Booklet A. No obligation.




# *Blue Ribbon**

**SUPERSTANDARD GUMMED TAPE**

*TRADE MARK

**HUDSON PULP & PAPER CORP., DEPT. C-7**
**505 PARK AVENUE, NEW YORK 22, N. Y.**



# MARSCHKE HOLDS THE *Heavyweight* TITLE!

☆ **Marschke Heavy Duty Floor Stands are massive. All of the weight is in the right places—Marschke's engineers put every pound into these uncontested heavyweight champions for an express purpose.**

**The net result—to you—is that really smooth spindle rotation which every user knows is *essential* for maximum service out of high priced wheels. Vibration—the abrasive eater—cannot be eliminated *excepting* through enough mass to absorb the stresses and strains—and the shock of sudden heavy loads.**

**Designed to last, and last, you'll find Marschke also offers you all of the advanced safety and operational features which you would naturally want your grinders to have.**

**Over 70 specifications of Swing Frame, Floor Stand and Pedestal Grinders—and Buffers . . . 1 HP on up.**

SHOWN: ONE OF THE MEDIUM SIZE MARSCHKE FLOOR STANDS



**MARSCHKE GRINDERS**

# VONNEGUT

**MOULDER CORPORATION**

**1889 MADISON AVENUE • INDIANAPOLIS 2, INDIANA**

(*Continued from page 262*)

drive either a complicated automatic mechanical transmission or a fluid generator which in turn drives a fluid pump and finally a speed reducer at the rear wheels," declared Prof. Schwartz. "The only excuse for such a complicated mechanism is that it works with accepted performance.

"In comparison, the gas turbine for automobiles offers a simple device consisting of a prime mover and torque converter in a single unit. The gas turbine as proposed for vehicle propulsion consists of two separate turbine wheels in which gas flows in a series, one to drive a compressor and one to supply power to the vehicle."

The reciprocating engine has received the attention of thousands of engineers and millions of dollars spent in a combined effort to make it a reliable, practical and acceptable efficient machine. If only a small portion of this time, effort and money were expended on gas-turbine development a highly efficient, reliable machine with improved performance could be made at reduced costs.

## ABRASION TESTER FOR TEXTILES

An improved wear-test machine is expected to provide more accurate predictions concerning the durability of textiles, according to a report now available from the Office of Technical Services of the U. S. Department of Commerce.

The machine, developed for the Army's Quartermaster Corps by a noted German technologist who was brought to the United States for this purpose, is a multipurpose abrasion tester, designed to simulate the various conditions causing wear on textiles during normal service life.

The machine described in the report has been under test for a year, and seems to have demonstrated remarkable usefulness. The results obtained from its tests have correlated closely with those revealed through actual controlled wear tests also being carried on by the Quartermaster Corps.

The report includes an introduction to the problems of measuring wear factors; a description of the construction and operation of the machine; and a discussion of the control of abrasive conditions for testing. Macro- and micro-wear patterns are pictured and analyzed. The precision of the machine is estimated in detail.

PB 98014, *An Improved Multipurpose Abrasion Tester and Its Application for the Evaluation of the Wear Resistance of Textiles,* (Textile Series Report No. 54) is available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., at $1.25 per copy. Orders should be accompanied by check or money order payable to the Treasurer of the United States.

A list of the titles in the "Quartermaster Textile Series" may be obtained from the Office of Technical Services on request.

(*Please turn to page 266*)





HOW TO SAVE MONEY ON

Quality Name Plates

Etched or lithographed, Ecoa quality name plates are themselves economical because they are permanent marks of distinction which add sales appeal to your product. They look better—longer. Ask us to quote on your designs—or if you wish, our Art Department is available to assist you in the design of your name plates. You can save money, too, by using one of nearly 5000 shapes and sizes for which we have dies in stock.




**FREE BOOK** If you or your engineering department can use this book, which shows the shapes and sizes of nearly 5000 dies we have on hand, *write for it on your letterhead.* Name plates made in these shapes and sizes save the cost of special tools.



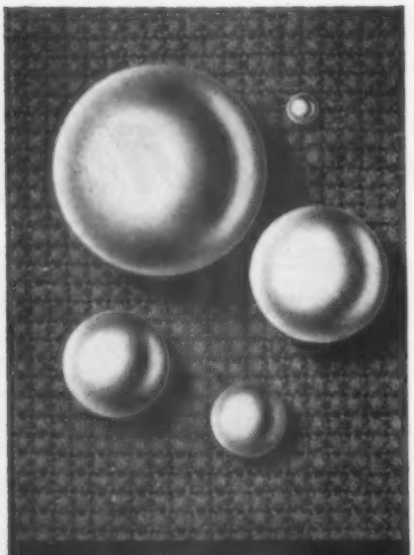

**ETCHING COMPANY OF AMERICA**

1520 MONTANA ST., CHICAGO 14, ILL., DEPT. C-11

Metal Name Plates, etched or lithographed • Plastic Name Plates, Dials and Panels, lithographed or screened • Etched Metal Scales, Clock Dials, Instrument Panels, Art Novelties, Advertising Specialties • Etched Metal Panels for elevators and architectural uses.

ECOA Name Plates

# a metal ball PROBLEM?



## Let STROM Work It Out For You



Whether it is a precision ball bearing or one of the other many ball applications in industry, your problem will not be entirely new. Strom has been in on many ball problems and knows the importance of the right ball for the job.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

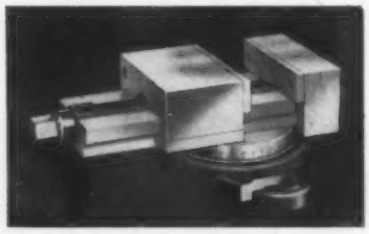
**Strom**
**STEEL BALL CO.**
1850 So. 54th Ave., Cicero 50, Ill.
Largest Independent and Exclusive Metal Ball Manufacturer


### NEW FIBERGLAS PIPE INSULATION

A fiberglas molded pipe insulation, able to withstand temperatures up to 800 deg. F., is announced by Owen-Corning Fiberglas Corp., Toledo, Ohio. Known as Fiberglas PF Insulation, Type 80, the new product is made of glass fibers bonded by a thermosetting binder and accurately molded in cylindrical form in all standard sizes up to 30 inches. The 800-degree temperature limit of the new pipe represents a 200-degree advance over the maximum limit of the Type 60 Fiberglas molded pipe insulation heretofore available.

The new product is available with a 4-ounce canvas cover as a standard stock item. It can be supplied with a heavier canvas cover, or with a 35-pound roofing felt jacket in place of canvas. for use in locations where it will be subject to occasional wetting.

### SMALL MACHINE VISE



A newly designed small swivel vise for holding work on shapers, milling machines, drill presses and other machine tools has been announced by the South Bend Lathe Works. The vise jaws have replaceable hardened steel inserts 4" wide and 1" deep. Maximum jaw opening is 4". The base has two open slots spaced 7½" apart for bolting vise to machine table. The vise swivels on the base and has 180° of graduations, reading from 0 to 90° right or left. Positive swivel locking is provided by two socket head screws and plug binders. A wrench is included for operating the vise.

For additional information and prices write to the South Bend Lathe Works, 309 E. Madison Street, South Bend 22, Indiana.

### PROTEKWOOD PACKAGING SAVES LUMBER AND PAPER COSTS

A new example of modern packaging showing that Protekwood is all that its name implies has been put into practice by Westinghouse Electric Corporation.

Westinghouse is using Protekwood to house huge shipments, such as generators and motors, while in transit on flatcars. Such valuable machinery must be delivered to the customer in perfect condition.

H. D. Smith, General Foreman of shipping for Westinghouse, points out that this new easily-applied laminated board, a combination of hardwood veneer and impregnated fibre faces, has proved to be the most satisfactory and least expensive material thus far used for protecting machinery while enroute to the customer by rail. The Protekwood sheets are used to cover the machinery completely, these sheets being lapped to shed water.

The first flat-car "houses" built of Protekwood, a product of United States Plywood Corporation, was shipped to Alberta, Canada, during the winter. The machinery arrived in perfect condition. Since then, Westinghouse has used Protekwood for many other shipments.

Formerly, Westinghouse used ⅜" poplar or yellow pine lumber for protecting flat-car shipments and the inside and outside were lined with sisal craft waterproof paper. "Under our new system of using Protekwood for these shipments," Mr. Smith says, "there is an important saving in lumber and paper. Protekwood can be more readily stored, since it takes up less room than lumber. And since Protekwood is considerably lighter than lumber, there is a saving in freight costs as well."

### TRANSPARENT PLASTIC BAGS FOR SMALL PARTS

Transparent polyethylene plastic bags for the packaging of small parts, fastenings, etc., are available in a variety of sizes and thicknesses from the Mehl Manufacturing Co., 2057 Reading Road, Cincinnati, Ohio. The bags are heat-sealable, tough, transparent, waterproof, and oilproof. Samples and complete information will be sent upon request.


**RUBBER** SOLID OR SPONGE

**SHEETS STRIPS GASKETS**

**Can be delivered to your specification in three days at the country's most competitive prices from the country's newest and most modern rubber works.**

MECHANICAL RUBBER PRODUCTS COMPANY

DORIS DRIVE
WARWICK
NEW YORK

# ROLOCK

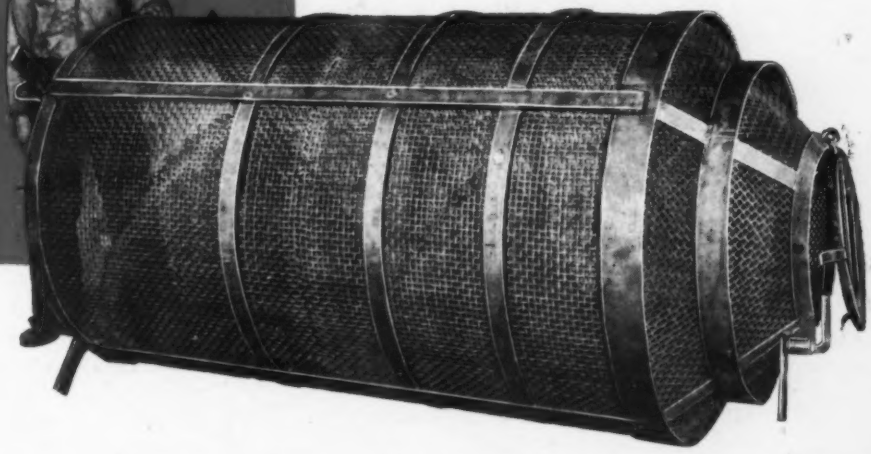
## FABRICATED HEAT AND CORROSION RESISTANT ALLOYS



We show here a Rolock fabricated-welded steel quench basket of unique design. It is used to quench loads of universal joint parts directly from a Homocarb furnace. The basket is inserted in a circular quench tank, parts dumped into basket which is lifted, drained, and emptied through lower discharge gate.

Internal baffles break the path of travel as work drops to bottom. Baffles provide maximum exposure time of work to cooled oil . . . assure uniform case hardness on all surfaces. Wire mesh permits rapid, complete drainage of quenching medium.

Working from your designs or ours Rolock will fabricate the correct type of equipment for your specific job . . . processing, finishing or heat treating. Moreover, fabricated-welded construction means lighter weight with equal or greater strength, long life. Send us your drawings or description of process . . . we can cut your costs, reduce rejects, improve the work.



*Offices in:* PHILADELPHIA • CLEVELAND • DETROIT • HOUSTON • INDIANAPOLIS • CHICAGO • ST. LOUIS • LOS ANGELES • MINNEAPOLIS

**ROLOCK INC. • 1270 KINGS HIGHWAY, FAIRFIELD, CONN.**

**JOB-ENGINEERED for better work**
**Easier Operation, Lower Cost**

13RL49

# PAGE FENCE - Since 1883

• AMERICA'S FIRST WIRE FENCE •



## Let an Expert Advise You

● Yes, a fence is a needed protection. Persons and property should be safeguarded against common hazards, but perhaps you are puzzled about the kind of fence you should have—the right style and height—the fence metal that best meets your needs. Near you is a local, reliable and experienced fence specialist who will gladly supply every fact you need and help you decide on the fence you should have. He will supply cost estimates—no obligation—and will erect your fence expertly. Write for detailed information about Page Chain Link Fence and we will send you his name and address.

*Write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, Pittsburgh, New York or San Francisco.*

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.



Sponges
Metal Polish
Weed Killers
Rust Removers
Floor Squeegees
Bar Soap
Insecticides
Paper Towels
Drain Openers
Aerosal Bombs
Cleaners
Mop Wringers
Dust Cloths
Sterilizers
Floor Seals
Rodenticides
Steel Wool
Garbage Cans
Deodorants
Soap Chips
Chamois
Germicides
Toilet Seat Covers
Liquid Soaps, Etc.
—Everything for better cleaning.




Buy with Confidence from the Janitor Supply House Displaying the N.S.S.A. Emblem

The *specialized* knowledge and experience of the janitor supply house displaying the National Sanitary Supply Association Emblem will prove helpful to you in the proper selection and use of the latest and most efficient equipment and supplies for speeding up your cleaning, maintenance and sanitation program. Proper supplies, equipment and methods *definitely* reduce cleaning costs!

**NATIONAL SANITARY SUPPLY ASSOCIATION**
(INCORPORATED NOT-FOR-PROFIT)
National Headquarters: 139 North Clark Street, Chicago 2, Ill.
*Leo J. Kelly, Executive Vice President*


## ECONOMICAL PREPAINT METAL CLEANING AND CONDITIONING

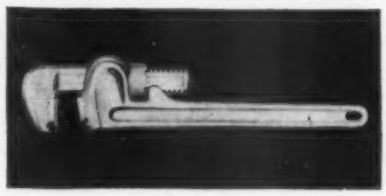
The CrysCoat process, an economical metal surface preparation procedure designed primarily for application in pressure-spray washing machines, is described in folder issued by Oakite Products, Inc., 54 Thames St., New York, N. Y.

The CrysCoat process effects improved adhesion of paint to metal, prevents corrosion of parts before painting, and localizes underpaint corrosion when final finishes are scratched or damaged. The method is said to save paint, produce more lustrous finishes, and prolong the service life of painted products. Economy-wise, the process is said to reduce production costs and to save time by eliminating the need for separate cleaning and surface treating operations.

Other economy contributing features of the method listed are (1) less equipment is needed; (2) no acid-proof equipment is required; (3) smaller amounts of solution are used for cleaning and conditioning; (4) less steam is required to heat solutions; less water needed for rinsing; and (5) downtime for equipment is minimized, as the solution show little tendency to clog machine spray nozzles, do not load solution tanks with excessive sludge deposits, and steam coils do not become coated with baked-on scale and sludge.

## ALUMINUM PIPE WRENCH

Drop forged aluminum pipe wrenches of high tensile aluminum alloy, heat treated for maximum strength and toughness, whose strength and wearing qualities are said to be comparable to heavier iron or steel, are announced by J. H. Williams & Co., Buffalo 7, N. Y. According to the Williams Company the wrenches will withstand the abuse and severe usage associated with this type of wrench, over years of service. The wrenches feature good balance, and represent a weight reduction of nearly 50%. The replaceable alloy steel jaw inserts are interchangeable, fitting handle or movable jaw. Multiple dove-tail design and retaining screw assure easy assembly and firm anchorage. The movable jaw is suspended between two springs, and gripping action is said to be immediate and positive.



**The aluminum pipe wrenches have natural satin finish.**

(*Please turn to page* 270)

# *COLOR



For maximum production . . . top efficiency . . . lowest operating cost, give your machines the finest in lubricants—give them Tycol oils and greases.

Tycol lubricants are made to meet every lubrication need of industry—from roll neck greases for steel mills to spindle oils for textile plants.

Each Tycol lubricant is subjected to rigid tests during manufacture. This control assures the required lubrication characteristics—*COLOR, penetration, viscosity, to name a few—for maximum performance of that particular product. At every step from selection of crudes to blending of the finished product, Tycol lubricants provide maximum lubricating efficiency which means greater economy, longer life for every type of equipment.

Tide Water Associated will be glad to assist you in selecting the Tycol lubricant best suited to your specific need. Call or write your nearest office for further details.

**TYCOL**

**INDUSTRIAL LUBRICANTS**

**Boston • Charlotte, N. C. • Pittsburgh • Philadelphia • Chicago Detroit • Tulsa • Cleveland San Francisco • Toronto, Canada**

**TIDE WATER ASSOCIATED OIL COMPANY**

17 BATTERY PLACE · NEW YORK 4, N. Y.



***LEARN WHAT THIS PRODUCT CHARACTERISTIC MEANS TO YOU — READ "LUBRICANIA"**
**This informative handbook, "Tide Water Associated Lubricania," gives clear, concise descriptions of the basic tests used to determine important properties of oils and greases. For your free copy, write to Tide Water Associated Oil Company, 17 Battery Place, New York 4, N. Y.**

**REFINERS AND MARKETERS OF VEEDOL — THE WORLD'S MOST FAMOUS MOTOR OIL**



...By the box or buy the billion they're **UNI-QUALITY**

**B-RIGHT-ON**
SOCKET SCREW PRODUCTS



Uniform top-quality . . . that's the mark of B-Right-On Socket Screw Products. Best materials . . . most modern production methods . . . careful inspection keep Brighton Products up to that *"Excellent"* rating they've earned with wise buyers. Compare a pair . . . compare a hundred . . . Brighton Screws are Uni-Quality.

Want to see for yourself?

**FREE SAMPLES**
**NO OBLIGATION . . .**
**JUST WRITE**

Specify Types and sizes.

**BRIGHTON**
Screw & Mfg. Co.

1845 Reading Rd., Cincinnati 2, Ohio


## "MAGNETIC" ADHESIVES MAKES POSSIBLE PRE-CEMENTING OF MATERIALS

A synthetic rubber cement, H-511 Urabond, developed by the Union Bay State Chemical Company of Cambridge, Massachusetts, makes possible the pre-cementing of many materials. Described as "magnetic" in its behavior, the pre-cemented surfaces can be joined together at a later time, on an assembly line or even after shipping to point of use, without loss of adhesion efficiency.

Upon application, the adhesive dries to a non-tacky condition after a period of from 15 to 30 minutes at room temperature. Thus, either handling the pre-cemented materials on an assembly line or shipping them for later assembly becomes feasible. When the pre-cemented surfaces are to be joined together, re-activation is accomplished easily and quickly by heating the "dead" surfaces under infra-red, steam or dry heat, or by brushing or spraying a solvent on the pre-cemented surfaces. The cement is said to provide an exceptionally strong and permanent bond and will join together or one to the other, a wider range of materials including fabrics, leather, glass, papers, wood, steel, aluminum, etc.

Amber in color, samples for testing may be secured by writing the Union Bay State Chemical Company, 50 Harvard Street, Cambridge, Massachusetts.

* * *

## NEW RESIN IMPROVES TRADE-SALES ENAMELS

Development of a new low-viscosity oxidizing type resin to supply easy brushing, extremely fast drying, good color and good gloss for trade-sales enamels and similar coatings is announced by the Resinous Products Division of Rohm & Haas Company, 224 Washington Square, Philadelphia, Pa.

The phthalic alkyd resin, identified as Duraplex C-57, was designed specifically as an outstanding vehicle for production of improved general-purpose syndicate enamels, household brushing coatings and toy refinishing enamels. It is said to meet also the strict requirements for coating agricultural implements, and for enamels for re-coating such equipment. It also possesses marked advantages in metal decorating enamels, where it bakes very rapidly to a tack-free film, exhibits good flow, leveling and hot-slip characteristics and shows excellent retention of color and gloss.

While it is expected that Duraplex C-57 will be generally utilized as the sole vehicle for coatings in which it is used, it also has worthwhile advantages in combination with other Duraplex resins. Its use in a 25:75 ratio with Duraplex D-65A is suggested for production of high-quality architectural white enamels. Investigations show its usefulness in blends with Duraplex C-55 for automotive refinishing enamels. Addition of 25 per cent of the new resin to a Duraplex C-55 enamel raises the solids content

(*Please turn to page 272*)


**WITTEK**
**HOSE CLAMPS**
*For Any*
**Hose Connection**



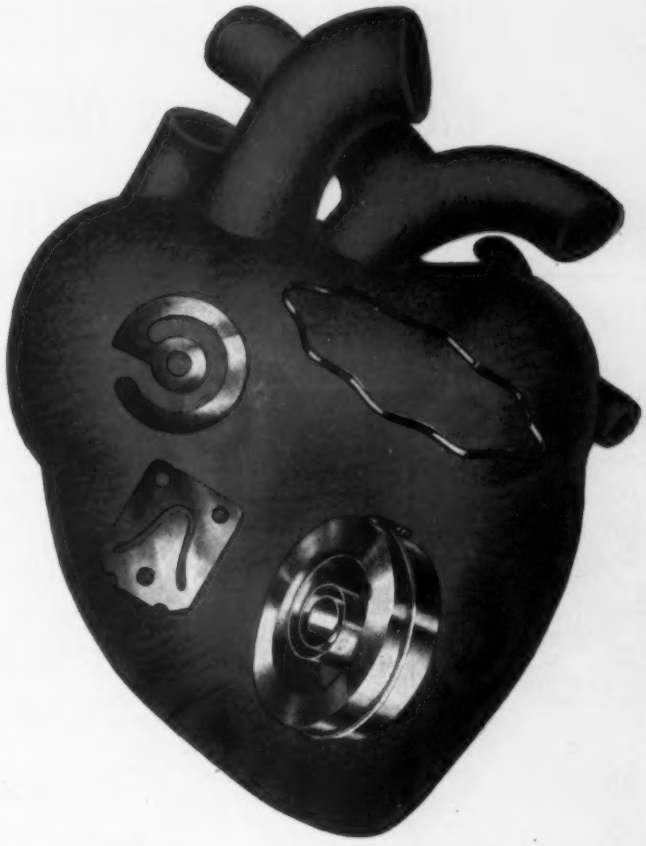

Whatever your hose connection requirement, there is a Wittek Hose Clamp to meet the need. Wittek Hose Clamps are made in many sizes and styles, and of various materials such as stainless steel, regular steel or brass. Each type of Wittek Hose Clamp is of proven design which assures dependable leakproof hose connection.

**See Your Supplier or Write Direct**

**WITTEK**
**MANUFACTURING CO.**
4330 W. 24th Place, Chicago 23, Ill.
Dependability in Hose Clamps for Over a Quarter of a Century

# IF FATIGUE LIFE IS THE "HEART" OF YOUR SPRING STEEL APPLICATION...

*Check with Sandvik*



One of Sandvik's specialties is supplying spring steel for applications where unusual fatigue life is vital.

A glance in the box below will give you an idea of what we mean. Clock and watch springs, flapper valves, vibrator reeds . . . these are all products that demand something special in the way of fatigue life.

Sandvik steels have specialized ability for tough services because they have "body". This is the inherent quality or "character" of the steel which gives it extraordinary physical properties. It is a result of the basic purity of the raw materials used plus the specialized methods and close control maintained in making Sandvik Steels.

Whenever your spring steel specifications ask for *greater fatigue life, finer surface finish, more accurate and uniform gauge* or *special physical properties,* talk it over with Sandvik.

Sandvik specialized strip steels are available:

- **In straight carbon and alloy grades**
- **In special analyses for specific applications**
- **Annealed, unannealed or hardened and tempered**
- **Precision-rolled in thicknesses from .001"**
- **With bright finish or polished bright, yellow or blue**
- **With round edges or square edges**
- **In a wide range of widths**

Write, on your letterhead, for your free copy of the new, Sandvik Spring Steel catalog. Technical advice also available on request.

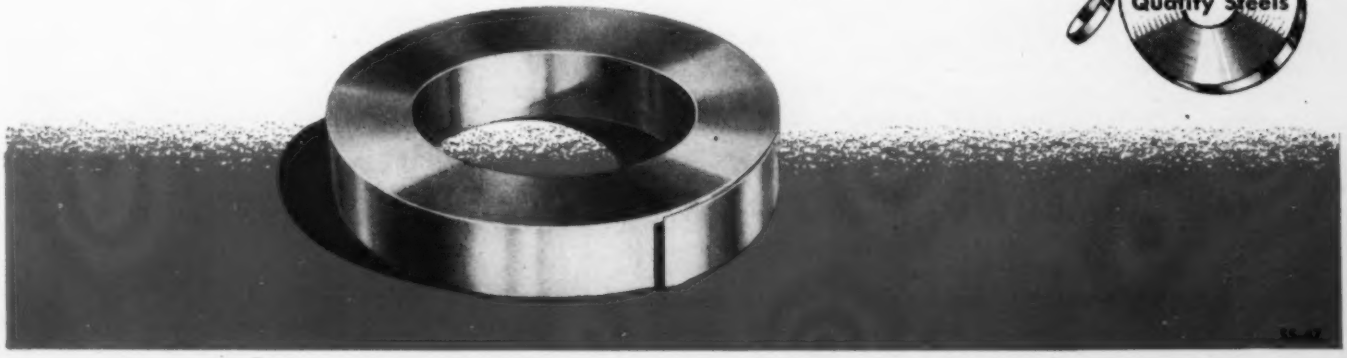
**SANDVIK STEEL, INC.**

111 EIGHTH AVE., NEW YORK 11, N. Y., WAtkins 9-7180
180 N. Michigan Ave., Chicago 1, Ill., FRanklin 2-1745
1736 Columbus Rd., Cleveland 13, O., CHerry 2303
*Warehouses:* New York and Cleveland
Sandvik Canadian Ltd., 426 McGill St., Montreal, Can.

**SOME SANDVIK SPECIALTY STRIP STEELS**

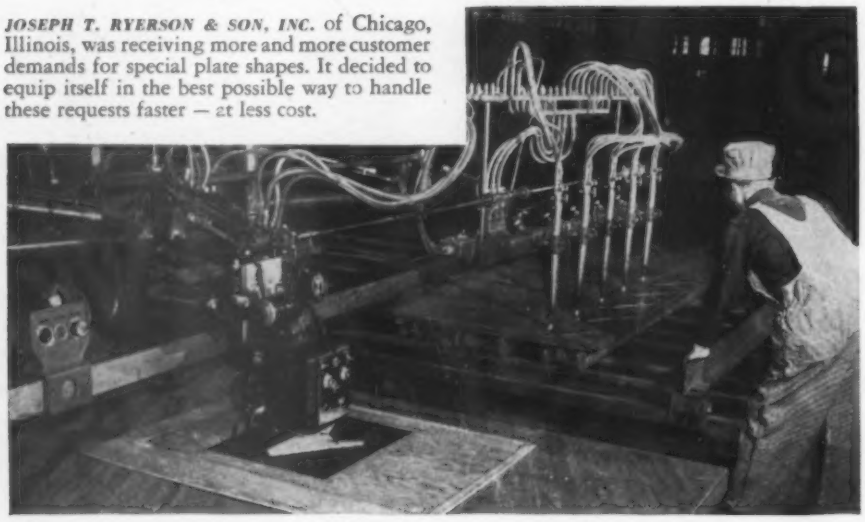
Band Saw Steels; Metal Band, Wood Band and Spring Temper · Camera Shutter Steel · Clock and Watch Spring Steels Compressor Valve Steel · Doctor Blade Steel · Feeler Gauge Steel · Flapper Valve Steel · Knife Steels · Razor Blade Steel · Reed Steel · Shock Absorber Steel Sinker Steel · Spring Steels · Textile Steels · Trowel Steel · Vibrator Reed Steel, etc.

Sandvik Quality Steels



# steel warehouse meets growing demand for special order plate shapes with electronic eye guided machine gas cutting

*JOSEPH T. RYERSON & SON, INC.* of Chicago, Illinois, was receiving more and more customer demands for special plate shapes. It decided to equip itself in the best possible way to handle these requests faster — at less cost.



***A. H. Yoch and J. F. Franzen,*** Airco Technical Representatives, were called in, and recommended machine gas cutting with Airco's new No. 41 Travograph, equipped with Airco's famous "electronic eye" tracing device. Ryerson has since put eleven of these new machines to work in its various warehouses throughout the country.

After installation, Ryerson soon confirmed that this equipment produced more intricate shapes on a production basis than any other type of cutting equipment — the "eye" following a sketch with a high degree of accuracy. Further, expensive template making was eliminated entirely.

Today, the variety of steel shapes flame cut by Ryerson is almost endless — for example, a few of the parts and pieces include: circles, rings, wrenches, flanges, weldment parts, crankshafts, clamps, housings, cams, machine parts, and die parts . . . highly profitable business for the "little iron store" that grew into one of the world's largest steel warehousing firms.

**TECHNICAL SALES SERVICE — ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS**

*To assure its customers of high efficiency in all applications of the oxyacetylene flame or electric arc, Air Reduction makes available the broad, practical experience of its nationwide Technical Sales Division personnel. The collective experience and knowledge of these specialists has helped thousands to a more effective use of Airco processes and products. Ask about this Airco "Plus-Value" service today. Write your nearest Airco office. (In Texas: Magnolia Airco Gas Products Company . . . On West Coast: Air Reduction Pacific Company)*

AIRCO **AIR REDUCTION**

*Offices in Principal Cities*

**Headquarters for Oxygen, Acetylene and Other Gases . . . Calcium Carbide . . . Gas Cutting Machines . . . Gas Welding Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories**


(*Continued from page 270*)

and results in a fuller, glossier film. Moreover, its gas-check resistance is helpful under severe gassing conditions. Used alone, Duraplex C-57 does not dry hard enough overnight to resist taping.

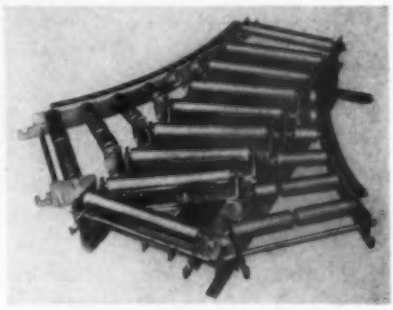
An inexpensive formulation for a general-purpose syndicate enamel follows:

*White Syndicate Brushing Enamel*

| *Roller Mill Grind* | *Pounds* | *Gallons* |
|---|---|---|
| Titanium dioxide (RA) | 206.2 | 6.4 |
| Lithopone | 165.2 | 4.6 |
| Surfex | 41.3 | 1.9 |
| Duraplex C-57 (60% solids) | 300.0 | 37.9 |
| Mineral Thinner | 37.5 | 5.8 |
| *Mix With* | | |
| Duraplex C-57 (60% solids) | 157.8 | 19.9 |
| Mineral thinner | 151.0 | 23.2 |
| 6% Cobalt naphthenate. | 2.3 | 0.3 |
| | 1,061.3 | 100.0 |

This enamel is at brushing viscosity (approximately 90 seconds Ford #4 Cup) as formulated. It will set to touch in 30 minutes and dry tack-free in about six hours. Wet edge retention is very good. Gloss of the brushed film is approximately 78 on a Photovolt glossmeter.

## THROUGH, LEFT OR RIGHT ROLLER CONVEYOR SWITCH



A new straight through, to the left or to the right roller conveyor switch for use with standard Litewate Roller or Wheel Conveyor, has been developed by the Standard Conveyor Company, North St. Paul 9, Minn.

It consists of a series of pivoted straight rollers, forming the central or main line, which can be manually turned to the left or to the right to divert commodities to the left or right, or the rollers may be set straight so as to provide straight-travel, as desired. The rollers are controlled by hand lever extending on both sides of the switch, so that control is possible from either side. The rollers always remain in true radial position, providing the carrying effect of a regular curve with rollers mounted in radial positions.

The switch is complete with 45-degree curve spurs on both sides and is fitted with Universal hook and rod couplings, so that straight or curved sections may be quickly attached to the switch.

(*Please turn to page 274*)




# Closed season on ducts!

Bare pipe lines, ducts and equipment are duck soup for highcost BTUs. Wherever there is no insulation—or insufficient insulation—you'll find BTUs bagging production dollars every day, every month!

The quick and easy way to keep BTUs in line, to cut your costs, is to call in CAREY. We'll give you some accurate data on heat losses. We'll show you a dollars and cents study of what proper insulation can do for you.

CAREY's *Complete Industrial Insulation Service,* to help industry *locate and eliminate* leaks in heat energy, includes:

1. ***Experience gained from development of industrial insulation jobs of all kinds and sizes. At Carey—your problem has been solved before.***
2. ***A complete line of low, medium and high temperature insulation materials, including 85% MAGNESIA—ASBESTOS—INDUSTRIAL ROCK WOOL.***
3. ***A coast-to-coast staff of practical insulation men plus material on hand to serve you fast.***

***Write for your FREE Copy*** of "Heat Insulation For Industry." This helpful booklet is an excellent guide to selection of industrial insulation—contains specifications and tables you'll want to keep handy. For your *free* copy, address your request to Dept. PU-11 The Philip Carey Manufacturing Company, Cincinnati 15, Ohio. In Canada: The Philip Carey Manufacturing Company, Ltd.—1557 MacKay Street—Montreal 25, P. Q.

**85% MAGNESIA—**
**INDUSTRIAL ROCK WOOL—ASBESTOS**

**• Pipe Coverings • Sheets • Blocks • Batts**
**• Papers • Air-Cell**

Carey.

**"NATIONAL GUARD DEFENDS AMERICA . . . . JOIN NOW"**

# SOMEBODY WAITED TOO LONG




***. . . and nobody made any money***

Small rush shipments are fine in the jewelry business, but we're talking about screws, nuts and bolts. In this business the small direct shipment can be a money loser for all parties.

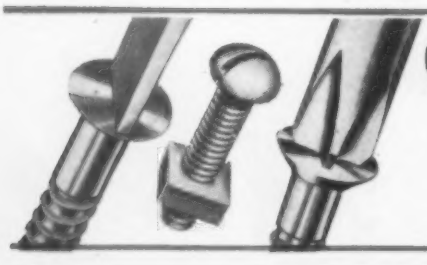
**The USER** loses because he needed the screws "yesterday" and didn't have them.

**The SCREW MANUFACTURER** loses because he's not rigged up to do a mail order business.

**The DISTRIBUTOR** loses because he didn't have the screws in stock and could not fill his customer's order without a lot of special paper work.

Gentlemen, let's *all* make money in screws, nuts and bolts by upping our inventories. Standard fasteners can be put to work much faster when they're *on hand* — than when they're *on order.*

ST-97



**CORBIN SCREW DIVISION**

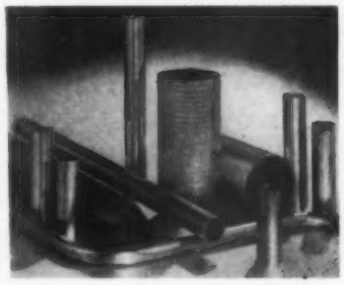
**THE AMERICAN HARDWARE CORPORATION • NEW BRITAIN, CONN.**

*Warehouses:* New Britain • New York • Chicago


## TO MANUFACTURE RIGIDIZED STEEL TUBING

Arrangements have been made by The Standard Tube Co., Detroit, with the Rigidized Metals Corporation, Buffalo, N. Y., for the manufacture of "Rigidized" carbon steel tubing. Rigidizing is a patented process for rolling textured patters in flat metal which redistributes the metal through the cross section of the material, thus increasing the stiffness, strength and impact value, and at the same time producing attractive textured patterns.

The patterns are rolled into the strip which is formed and electric resistance welded into tubing. Because of the fact that the patterns are rolled on both sides of the strip with a male and female roll, 16 gauge (.065") is the heaviest gauge that can be rolled at present. At the present time four different patterns are being produced, as shown in the illustration.



Rigidized tubing can be produced in sizes from ½" OD to 5½" OD, 16 BWG (.065") to 22 BWG (.028"). Squares, rectangles and special shapes are also available. It can be furnished in stainless steel as well as mild carbon steel and low-alloy high-tensile steels.

Plates report that no polishing is necessary because fine surface defects such as scratches are hidden by the reflection of light from the patterned material.

## ENGINE SPEED GOVERNOR FOR AUTOMOTIVE ENGINES

A centrifugal type engine speed governor featuring a flexible drive shaft, is new development of the Pierce Governor Company of Anderson, Indiana. It is a fully-enclosed precision unit that can be readily installed on any standard automotive type engine. The flexible drive permits installation of the governing unit at the carburetor (regardless of position of driving source) and receives its power input through any one of the four direct mechanical connections to the engine rpm. Thus it is driven in constant ratio to the engine speed and the proportionate centrifugal action of the governing weights is transferred directly to the butterfly valve which regulates the fuel supply to the engine. Valve box with butterfly valve is attached to the governor housing and is mounted between carburetor and manifold throat.

The governor can also be mounted as an integral unit of the carburetor. In this

(*Please turn to page 276*)

# POWELL VALVES ARE BUILT TO LAST

"First *to last*" is a good description of Powell Valves. Because, in the engineering of *every* valve in the Complete* Powell Line, a primary objective is long life at a minimum cost of maintenance.

There are Powell Valves specifically designed to meet the requirements of each and every flow control service in your industry. Therefore, if you install the *right* Powell Valves to meet individual service conditions, you can be assured of maximum performance. Consult Powell Engineers when you buy — either for replacement or for new installations.

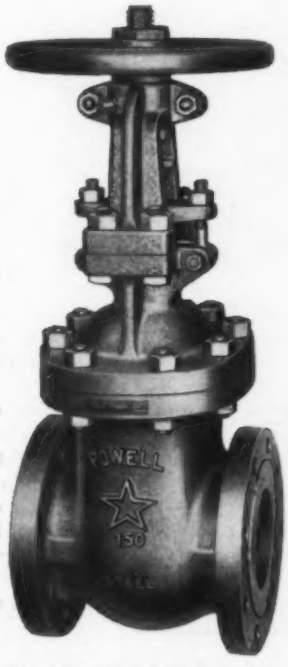



**Fig. 1503**—Class 150-pound Cast Steel Gate Valve with flanged ends, outside screw rising stem, bolted flanged yoke, tapered solid wedge.



**Fig. 375** — 200-pound Bronze Gate Valve. Screwed ends, union bonnet, inside screw rising stem and renewable "Powellium" wear-resisting nickel-bronze disc.



**Fig. 1708** — 200-pound Bronze Globe Valve with union bonnet, renewable specially heat treated stainless steel seat and regrindable, renewable wear-resisting "Powellium" nickel-bronze disc.

**Fig. 1793**—Large 125-pound Iron Body Bronze Mounted Gate Valve. Made in sizes 2" to 30", inclusive. Has outside screw rising stem, bolted flanged yoke and tapered solid wedge. Also available in All Iron for process lines. ➤



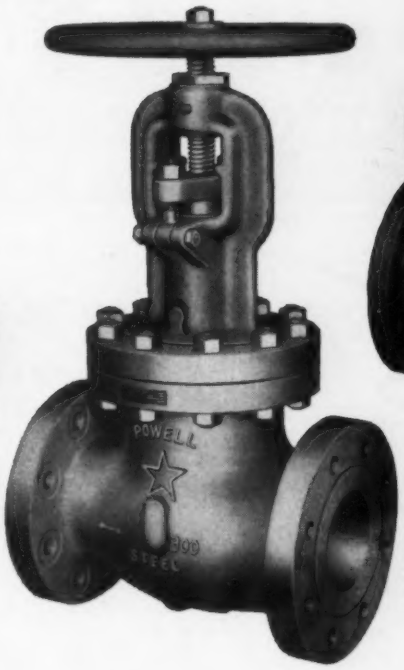



**Fig. 3031** — Class 300-pound Cast Steel Globe Valve with flanged ends, outside screw stem and bolted flanged yoke. ➤

*** Powell Valves are made in Bronze, Iron, Steel and a wide selection of Corrosion-Resistant metals and alloys. Valves of every type—Globe, Angle, Gate, Check, Non-return and Flush Bottom Tank Valves—are included in the Complete Powell Line.**

## The Wm. Powell Company, Cincinnati 22, Ohio

**DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES**

# POWELL VALVES


*Want Additional Product Information? See Page 19.*








(*Continued from page* 274)

installation it actually controls the carburetor fuel valve and no additional valve box is necessary. The governor receives power input from practically any available outlet through the use of a pulley or gear adaptor or by utilizing a standard distributor adaptor. Also available for some engine models is a special distributor with a tachometer outlet to which the governor cable can be attached. The pulley drive adaptor allows free engine performance when power take-off is not engaged.

The manufacturer states that the direct connections to the carburetor and to engine power made possible by the cable drive gives positive engine speed control.

## COVER CONVERTS DRUM INTO FIRESAFE WASTE CAN



Used 30 or 55 gallon drums can be converted into fire-safe waste containers by means of the Protectoseal Self-Closing drum cover, as shown in the illustration, made by the Protectoseal Co., 1920 South Western Ave., Chicago 8, Ill. Attachment is made by a single bolt tightening a steel band. If temperature within or surrounding the drum reaches 160°, a fusible link melts releasing a spring loaded plunger, closing the cover instantly. Constructed of heavy gauge steel, the cover is available in two sizes, the 30 gallon size and the 55 gallon size.

## BIBLIOGRAPHY ON GAS TURBINES, JET PROPULSION, AND ROCKET POWER

A new and complete bibliography of books and published reports on gas turbines, jet propulsion, and rocket power plants has just been published by the National Bureau of Standards and is now available from the U. S. Government Printing Office.

The bibliography includes sections on turbo-jet and prop-jet engines, other types of gas turbines, intermittent or pulse jets,

(*Please turn to page* 278)



# GAIR PLANTS

## LOCATED FOR IDEAL CORRUGATED BOX SERVICE

With these NEIGHBORHOOD PLANTS Robert Gair maintains LEADERSHIP in rendering service to many famous National Accounts.

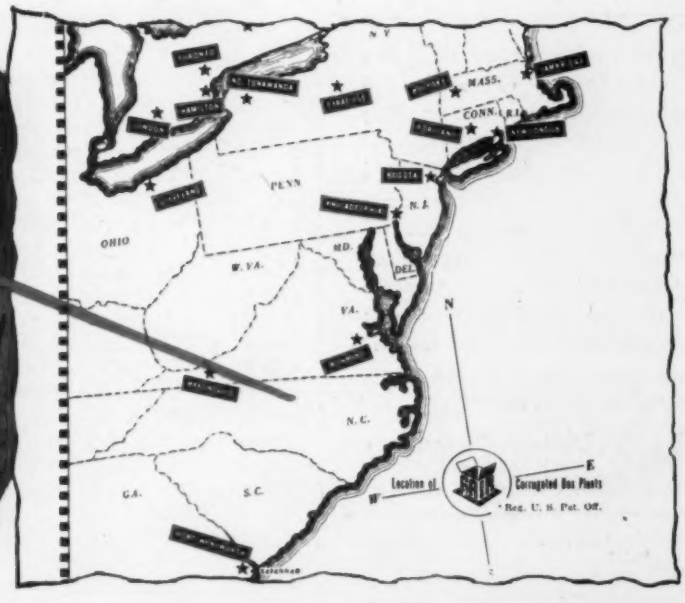
**SERVICE LEADERSHIP**... in the creation of new ideas for better shipping containers

**SERVICE LEADERSHIP**... in technical advice of advanced methods of sealing containers

**SERVICE LEADERSHIP**... on technical information regarding the relative merits of corrugated, solid fibre, jute and Kraft

**SERVICE LEADERSHIP**... for prompt, dependable deliveries of shipping containers

***Write for your free copy of***
Sealing of Corrugated and Solid Fibre Containers, or Container Handbook.



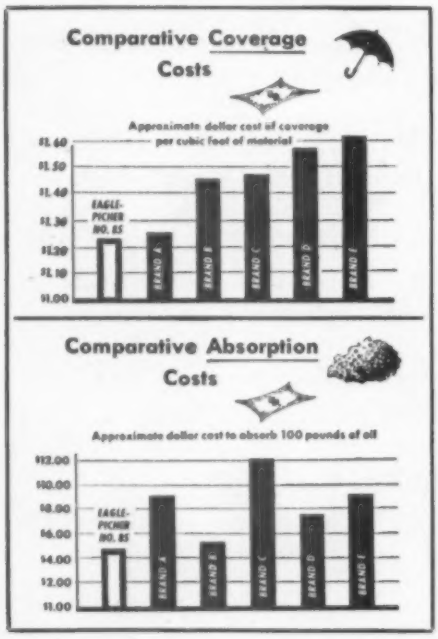

## ROBERT GAIR COMPANY, INC.

**155 EAST 44th STREET, NEW YORK 17 • TORONTO, CANADA**

PAPERBOARD • FOLDING CARTONS • SHIPPING CONTAINERS

# Here's proof

## Eagle-Picher Floor-Dry No. 85 gives you *More for your dollar!*




Comparative scientific tests show that Eagle-Picher Industrial Floor-Dry #85 outperforms the five other leading brands of floor drying compounds.

Eagle-Picher Industrial Floor-Dry #85 is a granular mineral compound—chemically inert, non-combustible and insoluble in oil, grease, kerosene or water. It can give you positive reduction in operating costs plus greater safety. Write for complete information.

***Packed in convenient 50-pound, multi-wall Kraft paper bags.***

## The Eagle-Picher Company

**GENERAL OFFICES: CINCINNATI (1), OHIO**

2027-ED

The Eagle-Picher Company
Department P-119
Cincinnati (1), Ohio
Gentlemen: Please send me complete information about Eagle-Picher Industrial Floor-Dry No. 85.

EAGLE EP PICHER

*Name* _____

*Address* _____

*City* _____ *County* _____ *State* _____


*(Continued from page 276)*

ram jets, rockets, jet-propelled helicopter rotors and propellors, compressors, turbines, combustion and combustion chambers, aerodynamics, metallurgy, machining and welding, and ceramic materials in gas turbines. Since the gas turbine and the jet engine may, in the future, utilize energy from nuclear fission, some references in this field are included. Each section is arranged alphabetically by author for each year covered. No references to periodicals appearing earlier than 1940 are included, since most development work on practical power plants has taken place within the last ten years.

Circular 482, *Bibliography of Books and Published Reports on Gas Turbines, Jet Propulsion, and Rocket Power Plants*, by Ernest F. Fiock, 49 pages 6 by 9, 20 cents a copy, available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Remittances from foreign countries must be made in United States exchange and must include an additional sum of one-third the publication price to cover mailing costs.

## PAK-LOADER FORK TRUCK SYSTEM ANNOUNCED



Boxes, barrels, bales, drums and cartons are readily handled in multiple units without the use of pallets, by the Pak-Loader Fork Truck System, recently announced by Yale & Towne Manufacturing Company, Philadelphia 15, Pa. The system is said to be most advantageous where large quantities of goods are stored, and when goods are customarily shipped unpalletized. Loads comprising individual containers are pushed into position in one operation on freight cars or trucks. The Pak-Loader system comprises fork trucks equipped with pusher mechanisms and two or three specially adapted steel plates per fork truck. The forks of the truck slip under the plate for lifting. When unloading the plate, the pusher on the truck is extended and the truck moves backward. A locking device holds the plate on the forks. While the truck is taking a load to storage, or from storage to shipping, another plate is being loaded in readiness for the truck's return.

The truck can be used as a regular fork truck for handling skids and pallets when such operations are employed.

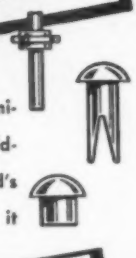
*(Please turn to page 280)*


# SAVE

- **MATERIALS**
- **MAN-HOURS**
- **MONEY**

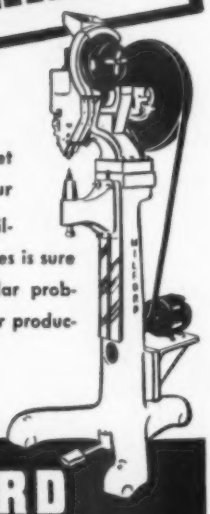
**with the . . .**

## RIGHT RIVETS



**Select exactly the right semi-tubular, split rivet, or cold-headed fastener from Milford's complete line. You'll find it pays in every way!**

## RIGHT MACHINE



**Then use the right rivet setting machine for your application. One of Milford's 15 basic machines is sure to solve your particular problem . . . and slash your production costs!**

**Write to Dept. B**

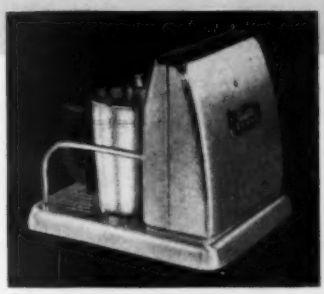
## MILFORD RIVET & MACHINE COMPANY

MILFORD, CONN.
ELYRIA, OHIO
HATBORO, PENN.

# AN IDEA DEVELOPED INTO A *finished product* BY GEUDER, PAESCHKE & FREY CO.




This Stainless Steel Campbell "Counter Kitchen" came to us just as an idea. It was developed by G. P. & F. Models were made in our experimental laboratory, construction perfected by our engineering staff, and the final product completely fabricated, assembled, wired for automatic electric operation, and polished to a satin finish . . . all as a part of G. P. & F. complete service.



**This is just another example of GEUDER, PAESCHKE & FREY CO. OVERALL FACILITIES**

If you have "just an idea," or a need, G. P. & F. is ready to help you develop it. If you have a product that requires improvement or redesigning to add beauty and lower production costs for a "buyer's market" . . . if your own production lines are inadequate and you hesitate to add costly equipment, investigate G. P. & F. proved complete service.

Prominent companies, both large and small, are taking advantage of G. P. & F. service in the production of sheet steel and aluminum items ranging from automotive and farm equipment parts to enameled washing machine tubs and stainless steel fruit juicers.

**ENGINEERING — DESIGNING**
**STAMPING — DRAWING — FORMING**
**ALL TYPES OF WELDING**
**TINNING — GALVANIZING — LEAD COATING**
**VITREOUS ENAMELING — SPRAY PAINTING**

*Write Contract Division*

G.P.&F.
CONTRACT DIVISION
MILWAUKEE

Our engineering, metal working and finishing specialists will gladly work with you.

**GEUDER, PAESCHKE & FREY CO., 1520 W. ST. PAUL AVE., MILWAUKEE 3, WISCONSIN**

# PAGE

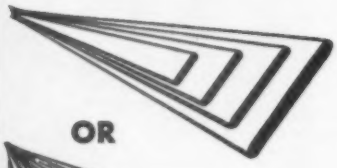
*Stainless Steel*

# WIRE

ROUND



FLAT



OR

SHAPED

***Page for Wire—Especially Stainless***

Remember that the next time you are looking for a responsible source for stainless steel wire. Wire has always been the business of PAGE. And PAGE has been working with stainless ever since its earliest development.

Whatever problem you may have involving wire—

*Get in touch with Page!*

ACCO

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Pittsburgh, Philadelphia, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

*In Business for Your Safety*


## PNEUMATIC IDLER FOR CONVEYOR BELTS

Belting engineers of Goodyear Tire & Rubber Company have re-designed the impact-cushioning pneumatic idler for conveyor belts.

Pneumatic idlers were first introduced by the company in 1938 and consisted of regular industrial tires, small in cross section and large in overall diameter, which were difficult to adapt to a conveyor structure.

The new idler uses airplane tires which will absorb several times the shock of the type formerly used. Most popular size 6.00 x 6 has a small diameter which is easily adapted to conveyor systems.



**Demonstrating troughing ability of new type pneumatic idler.**

The 36-inch size consists of six 6.00 x 6 tires mounted on a simply constructed stand with the whole unit on one axis rather than offset. The new development offers users of conveyor belts more latitude in size of bulk material to be handled on a belt conveyor system.

Goodyear doesn't intend to manufacture the pneumatic cushioning idler. It was developed as a service to the conveyor belt industry and its customers.

## BRUNING ANNOUNCES WHITE-PRINTER CAPACITY 10,000 SQ. FT. DAILY

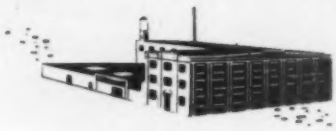
Model 50 whiteprinter recently put on the market by the Charles Bruning Company, Inc., 4754 W. Montrose Ave., Chicago, Ill., is designed to fit the requirements of users who need a compact whiteprinter capable of producing up to 10,000 square feet of BW prints during an ordinary working day.

The machine will copy anything drawn, typed, printed or written, and operates at variable speeds up to 24 ft. per minute. Prints are delivered flat and dry ready for instant use. The operation of the machine is odorless. It requires no plumbing connections or ventilating ducts, and can be located in any convenient space in the plant or office where necessary current is available.

Model 50 produces prints ranging from postcard size to 42 inches wide any length. Use of colored or tinted paper permits simple color keying; for example, experimental prints can be shown on pink paper, approved prints on yellow, and so on.

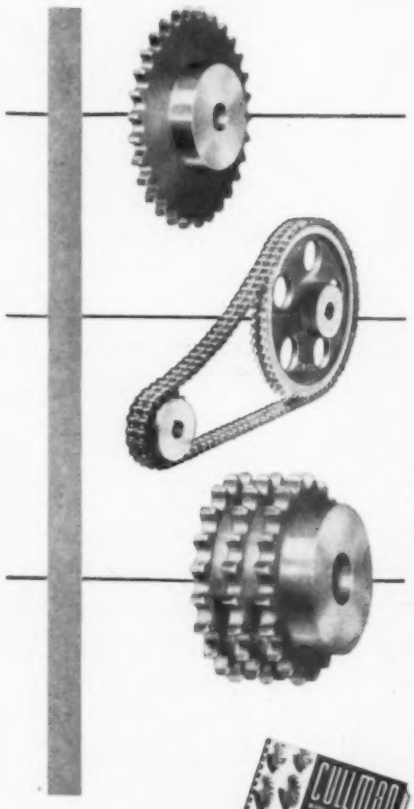
The new model is said to be ideal for making prints of mechanical drawings, working drawings, specifications, charts, plats, work orders, bulletins, and so on, as well as for copywork.


# CULLMAN Sprockets



**Over 80,000 Sprockets and 80,000 feet of Chain Now in Stock**

More than half a century of specialization in the design and manufacture of sprockets has made Cullman a leader in the sprocket field. Today, Cullman can ship promptly from its stock of over 80,000 sprockets, of endless types and dimensions. Too, sprockets for special requirements can be quickly produced at low cost due to Cullman's long years of experience and high precision production methods.



**Helpful Cullman Catalog** gives engineering data full information on sprockets and chains carried in stock




103-S

CULLMAN WHEEL COMPANY

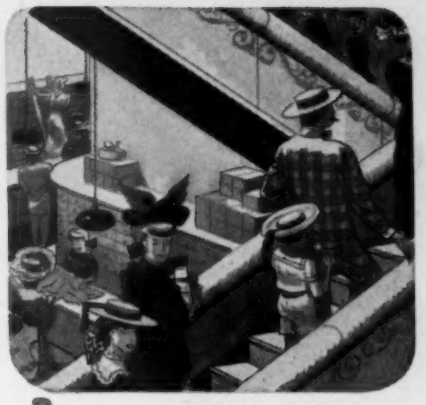
1352P Altgeld St. Chicago 14, Illinois



**1** **1800**—For centuries, steps were man's main means of going up. First came the ladder; later, crude steps formed stairways. Even so, man still had to ascend a step at a time under his own power.

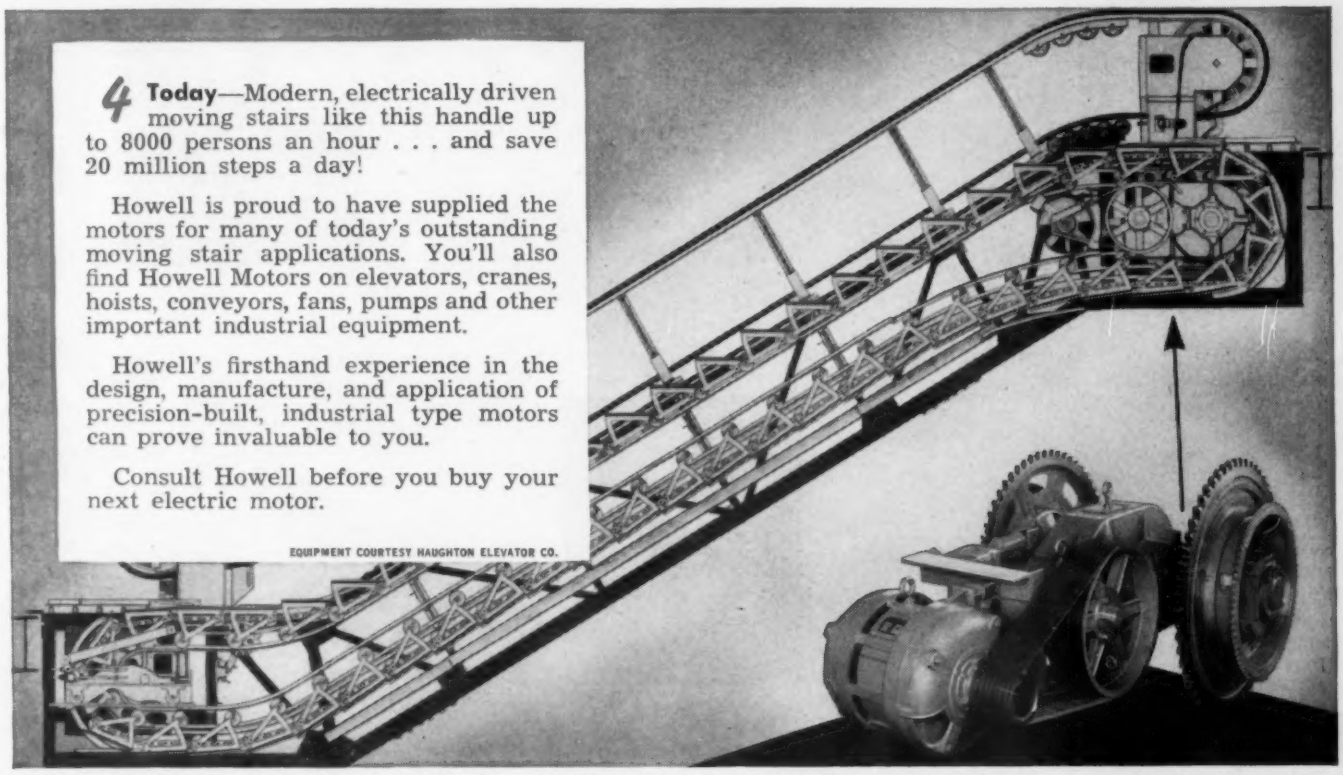


**2** **1875**—Stairways took all forms—straight, spiral, plain and ornate. Then, one Samuel Gray patented an "elevator and moving stairway." Though impractical, his idea set others to work.



**3** **1901**—The forerunner of today's moving stairs was installed in a New York store. By 1915, Howell "Red Band" Electric Motors arrived. Soon, these rugged motors were widely applied.

# SAVED...20 MILLION STEPS A DAY!



**4** **Today**—Modern, electrically driven moving stairs like this handle up to 8000 persons an hour . . . and save 20 million steps a day!

Howell is proud to have supplied the motors for many of today's outstanding moving stair applications. You'll also find Howell Motors on elevators, cranes, hoists, conveyors, fans, pumps and other important industrial equipment.

Howell's firsthand experience in the design, manufacture, and application of precision-built, industrial type motors can prove invaluable to you.

Consult Howell before you buy your next electric motor.

EQUIPMENT COURTESY HAUGHTON ELEVATOR CO.

*Free enterprise encourages mass production, supplies more jobs—provides more goods for more people at less cost.*



**Elevator Type Motor**

# HOWELL MOTORS

**HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.**

***Precision-built Industrial Motors Since 1915***

HOWELL Red Band MOTORS

# PERSONALITIES in the NEWS

**Phillip A. Kessler** has been appointed to supervise purchasing, production and estimating, in addition to becoming chief engineer for the Sage Equipment Company, Buffalo, N. Y. He was formerly associated with West Bend Equipment Company, West Bend, Wis.



Phillip A. Kessler

**Lester A. Lanning** has been named Acting General Purchasing Agent for the New Departure Division of General Motors, Bristol, Conn. Mr. Lanning replaces Joseph A. Ashwell, who has retired from active duty as Director of Purchases of the division for reasons of ill health.

Mr. Lanning has been affiliated with New Departure for 30 years. During that period he has been successively Superintendent of Heat Treatment, Chief Metallurgist, Assistant Bristol Plant Manager, Resident Manager of the Sandusky, O. plant, and Assistant to the General Manufacturing Manager at Bristol. He is a member of the American Society for Metals, the Society of Automotive Engineers, and the American Society for Testing Materials.

Mr. Ashwell had been in charge of New Departure's purchasing since 1921, when he became Purchasing Agent. In 1942 he was made Director of Purchases.

**J. R. Connell** has been appointed Assistant Purchasing Agent of The Babcock & Wilcox Tube Company, Beaver Falls, Pa., according to an announcement by Charles W. Spahr, Purchasing Agent of the company.

Mr. Connell attended the University of Pittsburgh. Since 1942 he has been in charge of the purchasing department of The Babcock & Wilcox Tube Company's Welded Tube Division at Alliance, O. Prior to association with the company, Mr. Connell had been with the sales and metallurgical divisions of the Carnegie Illinois Steel Corporation in Chicago and Pittsburgh.

**Hal Byrd** has been named Purchasing Agent for Deering, Milliken Mills, with headquarters in Spartanburg, S. C. He succeeds M. K. Thackston, who has resigned. Mr. Byrd formerly was with the company's industrial engineering department.

**James A. Doolittle,** Purchasing Agent, Merchandising Division, The Harshaw Chemical Company, Cleveland, O., has retired after 44 years of continuous service with the company.



James A. Doolittle

He was honored by the officers and his close associates in the company with a dinner recently at the Wade Park Manor, and was presented with a television set.

Announcement of a successor has not been made.

**J. A. Street** has been named to head the purchasing department of Sheffield Steel Corp., at Houston, Tex., following the resignation of A. F. Moog. Mr. Street, who since 1948 has been supervisor of raw materials, will continue to handle the duties of that post as well as acting as purchasing agent

**S. Howard Stewart** has been appointed Director of Purchases of Caswell-Runyan, Division of Newport Steel Corporation, located at Huntington, Indiana. He succeeds L. L. Baker, a member of the organization for the past forty years, who will continue to serve as lumber buyer on a limited schedule.



S. Howard Stewart

Mr. Stewart is a graduate of the University of Missouri. His experience includes three years in the Panama Canal Zone in the Division of Civil Affairs, and eight years with the F. S. Martin & Company, Chicago, as purchasing agent, auditor and credit manager. He joined Caswell-Runyan in October, 1943, as assistant Director of Purchases, after having served as Assistant Purchasing Agent for three years with Ayrshire-Patoka Collieries Corporation in Indianapolis.

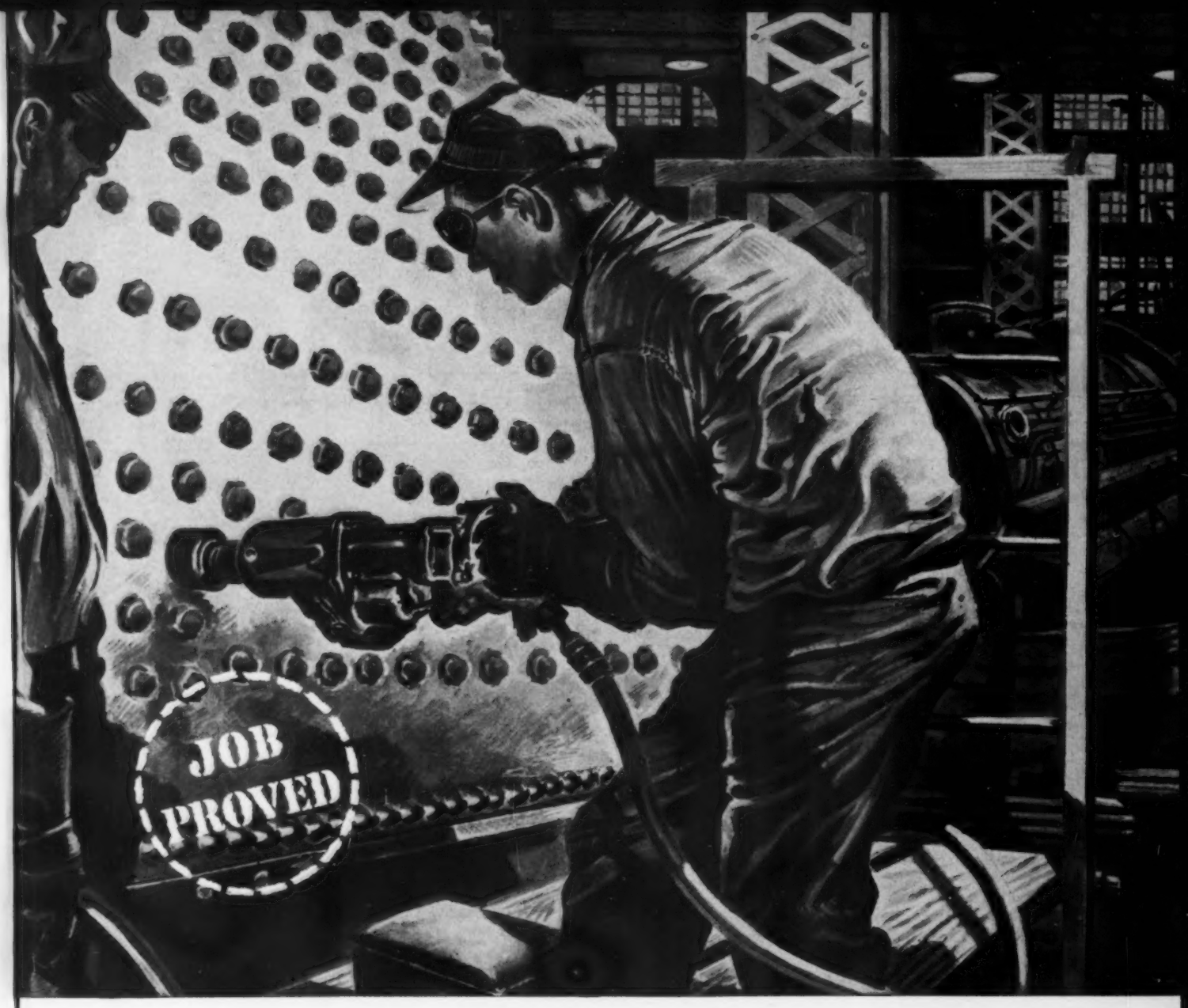
**F. C. Tucker** has been appointed Purchasing Manager of the Chemical Department of the General Electric Company, Pittsfield, Mass.

Mr. Tucker received a bachelor of science degree in chemistry from the Massachusetts Institute of Technology in 1932. He is a member of the American Chemical Society. Mr. Tucker was until recently Assistant Purchasing Agent with the Rohm & Haas Company.

**John T. Gaffney,** Acting Purchasing Agent since May 1, has been appointed Purchasing Agent of Purolator Products, Inc., Newark, N. J., according to an announcement by President Ralph R. Layte

Mr. Gaffney joined Purolator in November 1948, and became Assistant Purchasing Agent last February. He was formerly with Simmonds Aerocessories, Inc., and Remington Rand, Inc.

(*Please turn to page* 284)




# SHUTDOWNS DRASTICALLY REDUCED

## Sun Lubricant Virtually Eliminates Crippling Shutdowns in Railroad Shop

A railroad maintenance shop was being hamstrung every 3 or 4 weeks by the shutdown of a compressor supplying air to hammers, grinders, and other equipment. Hard carbon formed on the compressor valves. In 2 years, 150 valves had to be replaced.

A Sun Engineer was asked to study the problem. He recommended a Sun Oil that has been "Job Proved" in hundreds of compressors. In the next 2½ years, with the Sun oil in the crankcase, only 5 valves required replacement. The saving in parts alone was $2,500, and the greatly improved performance of the compressor permitted almost continuous operation of shop machinery.

This is typical of the increased efficiency and the savings made possible in many kinds of industrial plants where Sun petroleum products are used. For example, by switching to Sun Tableway Lubricant a manufacturer eliminated "gumming" and saved $1,000 a month on a single grinding operation. In one industrial plant a Sun quenching oil saved $7,000 in one year. Tested after six years' use in the hydraulic system of a 500-ton press, a Sun oil was found to be still in good condition.

For information about Sun "Job Proved" products for your industry, call the nearest Sun Office.

**SUN OIL COMPANY, *Philadelphia 3, Pa.***
*In Canada:* Sun Oil Company, Ltd., Toronto and Montreal

**SUN PETROLEUM PRODUCTS**
**"JOB PROVED" IN EVERY INDUSTRY**

SUNOCO

**James Young,** assistant purchasing agent at Philadelphia, Pennsylvania Railroad, has been promoted to assume the duties of James Deery, assistant purchasing agent, who retired November 1 after more than 50 years of service. Mr. Deery will be 70 years of age on November 27. Mr. Young entered railroad service in 1907, and was named assistant purchasing agent in 1929.

Glenn J. Hoffman, assistant purchasing agent at Chicago, succeeds Mr. Young at Philadelphia, and John P. Sherron, an assistant purchasing agent at Philadelphia, succeeds Mr. Hoffman at Chicago. G. E. Hargreaves succeeds Mr. Sherron at Philadelphia.

**Thomas D. Jolly,** Vice President in Charge of Purchases and Engineering, Aluminum Company of America, Pittsburgh, Pa., was re-elected president of the American Standards Association at recent meeting of that body in New York. Mr. Jolly, who has long been active in purchasing association circles, has been with the Aluminum Company since 1915, rising from the positions of master mechanic and superintendent of maintenance at one of their plants, to that of buyer and later purchasing agent, was made Chief Engineer and Director of Purchases in 1937, and in September of of 1942 was appointed to his present position. In 1948 he served as adviser to the Hoover Commission studying government reorganization and in the same year he was awarded an honorary degree as a doctor of engineering from the Rensselaer Polytechnic Institute. In 1943 he was awarded the J. Shipman Gold Medal, founded by the Purchasing Agents Association of New York, and awarded each year through the National Association of Purchasing Agents to one who, by precept, or distinguished service has contributed to the advancement of purchasing.

**Gerard M. Haley,** has been appointed Director of Purchases for The Chevrolet Motor Division of the General Motors Corporation, Detroit, Mich., replacing R. G. Ford who has been promoted to manager of assembly plants. E. F. Gormson succeeds Mr. Haley as purchasing agent at Chevrolet's central office, with Milton J. Schemm as his assistant.

E. J. Furbacher was named purchasing agent for the gear and axle and forge plants, and Kenneth V. Daniels was named purchasing agent at the Toledo plant.

George B. Ford was appointed purchasing agent at the Saginaw grey iron foundry to replace John M. Hance, who is retiring, and Carl S. Allemang replaced Mr. Ford as purchasing agent of Chevrolet's parts manufacturing division.

**Stuart F. Heinritz,** Editor of PURCHASING, addressed a special conference of the British Purchasing Officers Association, held during its convention in Scarborough, Yorkshire, England, on October 2. Mr. Heinritz also spoke at the London Branch meeting of the association on October 10. at the Birmingham Branch meeting on October 11, and at the Leeds Branch meeting on October 13.

**A. H. D. Perkins** has been appointed Purchasing Agent and Building Manager of Memphis Publishing Company, Memphis, Tenn. The company publishes The Press-Scimitar and Commercial Appeal. He succeeds the late Hearn W. Tidwell, Sr.

**Hubert L. Smith** has been appointed Purchasing Agent of the Hollingsworth & Vose Company, East Walpole, Mass. He succeeds J. O. Hill, who recently retired after 30 years of service with the company.

**Robert Swanton,** Director of Purchases at the Winchester Repeating Arms Company, and chairman of the Business Survey Committee of the National Association of Purchasing Agents was the principal speaker at a recent meeting of the New Haven Advertising Club. He discussed the monthly N.A.P.A. business report.

**M. J. McNicholas** has been named Purchasing Agent of North American Philips Company, Inc. at the firm's Dobbs Ferry, N. Y. plant.

Mr. McNicholas joined Philips in 1941. For two years during the war he was on loan to the War Production Board in Washington as the Chief of the End Equipment Section of the Radio and Radar Division. Before his promotion, he was in charge of production control at the Dobbs Ferry plant.

Prior to 1941, Mr. McNicholas has been associated for 14 years with Fada Radio and Electric Corporation and 3 years with Bendix Home Appliances.

**Erving A. Furbush** has been named Purchasing Agent of The Christian Science Publishing Society, Boston, Mass. He succeeds Russell D. Hauk, who has resigned to enter another field of activity. Edwin H. Shaul has been appointed buyer to assist Mr. Furbush.

**Truman Wood** has been appointed General Purchasing Agent of The Liquid Carbonic Corporation, Chicago, Ill. Mr. Wood came to Liquid after 10 years with Motorola. Immediately prior to joining Liquid, he was Director of Purchases for the Dormeyer Corporation.

## AMONG THE COMPANIES YOU BUY FROM

**Salt Lake City, Utah** — American Wheelabrator and Equipment Corp. T. Max Stanger of this city has been added to the sales staff of the company, which had not been previously represented here.

**Kalamazoo, Mich.** — Butterfield Division, Union Twist Drill Co. Bond Supply Co. has been named distributor in Kalamazoo and Battle Creek.

**New Orleans, La.** — American Manufacturing Company. Marion Baker has been added to the company's sales staff. He will work out of the office at 1319 Tchoupitoulas Street.

**Detroit, Mich.** — Cooper Alloy Foundry Co. Wm. G. Boales & Associates has been named Michigan representative for the company.

**Denver, Colo.** — Bliss & Laughlin, Inc. Henry R. Hansen, with headquarters at 1863 Wazee St., has been named sales representative in the states of Colorado, Montana, Wyoming, Utah, New Mexico, and a part of Nebraska.

**New York, N. Y.** — Continental Equipment Corp., 30 Church St., has been appointed by By-Buk Products Co., Jacoel Products Co., and Oxygen Products Co., as distributors for Scotch-lite sheets, cable splicing machines and portable oxygen equipment.

**Milwaukee, Wis.** — Westinghouse Electric Corporation. A. M. Fisher has been made industrial manager and J. A. Holden manager of the Milwaukee office.

**Chicago, Ill.** — The Superior Electric Company. R. J. Caccavelli has been named manager of the sales office here. Until permanent quarters are established he will operate through P. O. Box 48, Oak Park, Ill.

**Chicago, Ill.**—The National Radiator Co. E. Richard Walter has been appointed mid-western sales representative of the plastic metals division, with headquarters at 400 W .Madison St.

**Rochester, N. Y.**—Permanente Products Company. A new sales office for Kaiser aluminum has been opened here at 45 Exchange St. George Kurachek is sales representative in charge.

**Chicago, Ill.**—Flexible Steel Lacing Co. Fred O. Benson has been named sales representative for Illinois. He takes over most of the territory formerly covered by Sam Baker, who has retired.

**Mertztown, Pa.**—Atlas Mineral Products Company. A. Myles Younger has been elected vice-president in charge of sales. He was formerly general sales manager.

**New York, N. Y.**—Nathan Trotter & Co. Russell C. Clark, vice-president of the Tin Sales Corporation, agent for Reconstruction Finance Corp., has resigned that post to join Nathan Trotter & Co. He has opened an office here at 24 State St. for the conduct of a brokerage business in metals, particularly pig tin.

**Cleveland, O.** — The Electric Products Company. E. G. Schroeder has been appointed field sales manager, and will supervise all district sales activities.

**Rochester, N. Y.**—Hartford Special Machinery Co. Joseph Windheim has been named exclusive agent for the company in the Buffalo, Rochester, Syracuse territory.

**Dallas, Tex.** — Chain-Belt Company. A new warehouse has been opened here at 1611 Dragon Street.

(*Please turn to page* 286)

# FELT, LIKE RADIO, HAS NO HORIZONS

Just as radio signals can be picked up and put to use almost anywhere, so felt has infinite usefulness. It is a material of a million uses, in home and factory, products and processes. Sound absorption—thermal insulation—wicking—sealing—packing—gasketing—vibration and shock dampening—lubrication—polishing; these are but a few of the hundreds of applications which make felt one of the engineers' most versatile and useful materials.

When you think of felt, think far beyond hats and slippers. Think of engineered felt—American Felt! As made by American Felt Company, felt is a strictly-controlled engineering material, accurately standardized in many types for an infinite number of industrial as well as textile applications. In practically every factory in this country felt contributes to the economy and reliability of machinery. Consumer products in the greatest variety, from clothing to automobiles, are better because felt is used in them. Some examples of felt's uses are shown here. It will pay you to study them and ask yourself if you are making full use of this material that is so versatile because it can be endowed with so many different characteristics. Please write on your letterhead for

THE STORY OF FELT.

**American Felt Company**
TRADE MARK

General Offices: 44 Glenville Road, Glenville, Conn. — PLANTS: Glenville, Conn.; Franklin, Mass.; Newburgh, N. Y.; Detroit, Mich.; Westerly, R. I. — SALES OFFICES: New York, Boston, Chicago, Detroit, Cleveland, Rochester, Philadelphia, St Louis, Atlanta, Dallas, San Francisco, Los Angeles, Portland, Seattle, Montreal.

## NOTE TO DESIGNERS

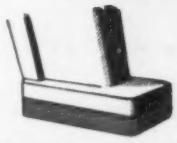
No matter what the project may be on your boards, the chances are that felt can help you make it better or more economically. Remember, felt is an engineering material which can be specified exactly. Send for illustrative samples and technical data sheets published and distributed by American Felt Company.



**SEALS.** Felt seals—plain, laminated, or impregnated—retain grease and oil, are self-lubricating, and exclude dust, fumes, water, and mud. Used to seal bearings, housings, etc.



**WICKS.** Felt wicks—designed and engineered for controlled operation, feed oil to bearings and remote friction points, or deliver other fluids where they are wanted.



**VIBRATION.** Felt vibration mountings, placed under machines or other equipment, are effective in dampening shock or absorbing up to 80% of the vibration.



**FLAME PROOFING.** Felt for aircraft, theatrical and other mechanical or decorative applications is flame proofed so that it will not support combustion or propagate flame.



**TROPICALIZATION.** Felt can be tropicalized to resist fungi, mildew, vermin, moths, moisture. Such felt is a vital part of many products going into tropic countries, giving lasting protection against destructive rot and insect infestation.



**COATING.** Coatings such as natural rubber, synthetic elastomers, or vinyl resins can be applied to felt, producing an impervious surface or adhesive backing for quick easy application. Either heat or pressure sensitive backings may be employed.



**PACKING.** Vistex is a rubber-impregnated felt-base packing and sealing material in several different types. TCR Vistex is highly resistant, for example, to tricresyl phosphate, and is recommended for hydraulic systems using that special fluid.



**SOUND ABSORPTION.** Special "K" felt, widely used in airplanes, theaters, and elsewhere, absorbs sounds, reduces noise transmission or improves acoustics. This felt also provides thermal insulation and is safe because it is flame resistant.



# Outwear Bristle 4 to 1 on Rough Surfaces

*NEW!*

## FULLER NYLON PAINT BRUSHES

**To provide a good, tough brush that will wear well on even the roughest painting surfaces, The Fuller Brush Co. has augmented its 100% pure bristle brushes with a new line of 100% NYLON brushes. Fuller research has developed the *correct* mixture of sizes, tapered and crimped nylon for excellent paint pick-up, retention and spreading qualities.**

Phone your local Fuller Branch Office or write

The FULLER BRUSH CO.

INDUSTRIAL DIVISION, 3554 MAIN ST. HARTFORD 2, CONN.

IN CANADA: FULLER BRUSH COMPANY, LTD., HAMILTON, ONTARIO


**Cleveland, O.**—The Cleveland Cap Screw Company. Howard R. Swartz has been appointed general sales manager.

**Newark, N. J.**—Kolker Chemical Works. J. G. Brunton has been appointed vice-president in charge of sales.

**Wilmington, Del.**—Bond Crown & Cork Company. Willard M. Pearson has been named manager of sales for the company, a subsidiary of Continental Can Company.

**New York, N. Y.**—George Haiss Mfg. Co. Wm. E. Madden, recently elected vice-president, has been made general sales manager of the company, a division of the Pettibone Mulliken Corp.

**Spokane, Wash.**—United States Plywood Corporation has opened its 29th warehouse at 3508 East Riverside Avenue. It will serve the Inland Empire and Montana.

**Newark, N. J.** — Pittsburgh Plate Glass Company. J. T. Murnane has been named



J. T. Murnane

industrial sales manager for the company's paint division here. He succeeds the late C. A. Roebuck.

**Detroit, Mich.** — Page Steel and Wire Division, American Chain & Cable Company. J. F. Hawkins has been appointed district sales manager here with headquarters in the General Motors Building.

**Detroit, Mich.** — Bay State Abrasive Products Co. The branch office and warehouse has been moved to 880 Lawndale Avenue.

**Buffalo, N. Y.** — Acme-Winter Corporation. Ted Nagle has been named vice-president and director of sales and advertising.

**Bridgeport, Conn.** — The Bullard Company. M. K. Peck has been appointed to supervise sales of the recently acquired Bullard-Universal horizontal boring machine line.

**Davenport, Iowa** — Wel-Met Company. J. R. Gelomb has been named manager for eastern Iowa and Moline, Ill., with offices here at 321 E. Second Street.

**Chicago, Ill.**—Franklin Steel Division, Borg-Warner Corp. Stanley E. Cobbledick has been appointed sales manager of the division.

(*Please turn to page* 288)

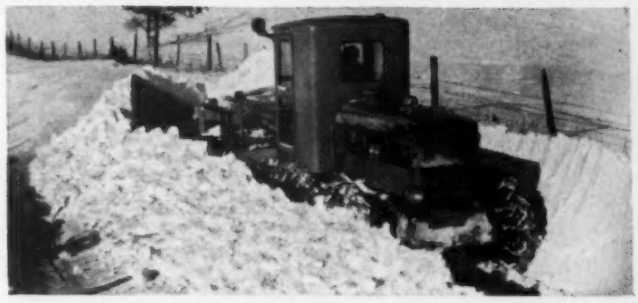
# WHERE DEPENDABILITY IS VITAL ...YOU'LL FIND EXIDE BATTERIES



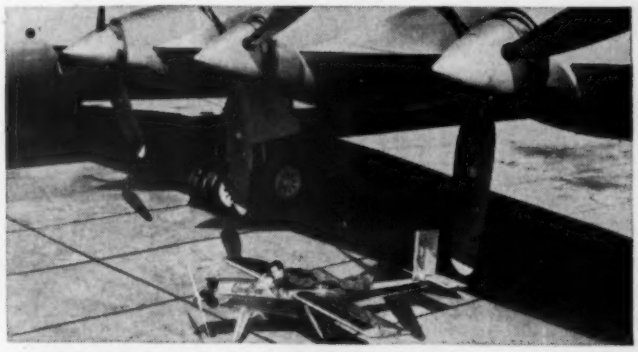
**GUIDED BY RADIO.** Miles away landing instructions were received over a battery-powered communication system. Many Exides are used for this and other aviation services.



**FOOD FOR EUROPE** is handled with speed . . . in factories and warehouses, on railway platforms and ocean piers . . . by electric industrial trucks powered by Exide Batteries.



**MILK FOR CITY BABIES** . . . all farm products . . . must be kept moving . . . and highways open. On thousands of snowplows and other automotive equipment, dependable service is assured by Exide Batteries.



**AVIATION'S GIANT AND MIDGET.** World's largest and smallest airplanes, weighing 265,000 and 360 pounds, respectively. Exides provide battery power for electrical services on thousands of transport, government and personal planes.

There are Exides for every storage battery need. Railroads use them for car lighting, air-conditioning, signal systems, Diesel locomotive cranking. Exide Batteries are used by telephone and telegraph companies, radio and television stations, electric light and power plants. They provide motive power for mine locomotives and shuttle cars. On ocean vessels, they serve many vital needs. And on millions of cars, trucks and buses, they daily prove that "When it's an Exide, you start."

Information regarding the application of storage batteries for any business or industrial need is available upon request.

THE ELECTRIC STORAGE BATTERY CO
Philadelphia 32
*Exide Batteries of Canada, Limited, Toronto*

**Exide** *Reg. Trade-mark U. S. Pat. Off.*

***1888 . . . DEPENDABLE BATTERIES FOR 61 YEARS . . . 1949***

NOW YOU CAN GET
Sterling WOOD HANDLE
WHEELBARROWS



No. S5W — for handling sand and other dry materials. 14 ga. tray. Max. cap. 4 cu. ft.

You'll like these new, lightweight, easy-wheeling Sterlings, designed for faster material transport service. Famous Sterling balanced construction puts 80% of the load on the wheel . . . only 20% on operator. Equipped with long wood handles, formed to fit operator's hands. Steel channel legs and reinforcements are just the right height. Means less stoop for operator and greater leg clearance. Steel wheel, roller bearing wheel with pneumatic tire or zero pressure cushion type wheel, can be furnished. Write for new Wheelbarrow Catalog.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.
Look for this Mark of STERLING Quality
Sterling WHEELBARROWS
A 5652-⅓A

NOW for a better fit, more comfort, longer wear
NEW, IMPROVED
NEOPRENE HOOD INDUSTRIAL
CURVED-FINGER GLOVES!



New Hood gauntlets and knit wrists provide new *comfort*, better *fit*, longer *wear* for *vital* hands. In addition, there's ample knuckle allowance, curved fingers and thumbs, reinforced thumb crotch, no seams on working surface, *color fast* knit wrists. Be sure of new protection, new efficiency. Order from your jobber today!

HOOD for Safety plus
HOOD RUBBER CO.
Watertown, Mass.
DIVISION OF THE B. F. GOODRICH CO.



FORGINGS AND STAMPINGS

DIXISTEEL forgings and stampings are made of carefully analyzed steel produced in our own open hearth furnaces. They are of highest quality and strentgh.

Send us your prints or specifications for forged or stamped parts, and we will be pleased to submit our estimate for production.

ATLANTIC STEEL COMPANY
P. O. BOX 1714 DIXISTEEL ATLANTA 1, GEORGIA

**Houston, Tex.**—Colonial Broach Company. Dolan Industrial Sales, 318 Union National Bank Building, has been appointed representative to handle distribution and sales engineering.

**New York, N. Y.**— Fitzgibbons Boiler Company, Inc. Milton O. Lange has been appointed manager of plate product sales. He was formerly special sales representative for Joseph T. Ryerson & Son, Inc.

**Hartford, Conn.**—The Abbott Ball Company. John G. Benjamin has been named sales manager for both the bearing ball and burnishing divisions.

**New York, N. Y.**—Sylvania Electric Products, Inc. Stuart Goodwillie has been named manager of the business relations department of the company, and in addition, will service national lighting accounts.

**Chicago, Ill.** — Hudson Pulp & Paper Corporation. William T. Blake has been appointed sales manager, western division, with headquarters here. Mr. Blake was



William T. Blake

formerly assistant to T. H. Mittendorf, who was recently transferred from Chicago to New York to take up duties as vice-president in charge of sales.

**Jersey City, N. J.** — L. O. Koven & Brother, Inc. Kenneth H. Mac Watt has been named director of engineering sales, to succeed W. D. Birch, resigned.

**Cincinnati, O.**—Brown Instruments Division, Minneapolis-Honeywell Regulator Company. Charles D. McIntire has been named industrial sales manager of the branch office here.

**Pittsburgh, Pa.** — The Electric Storage Battery Company. C. H. Leet has been named manager of the Exide branch here.

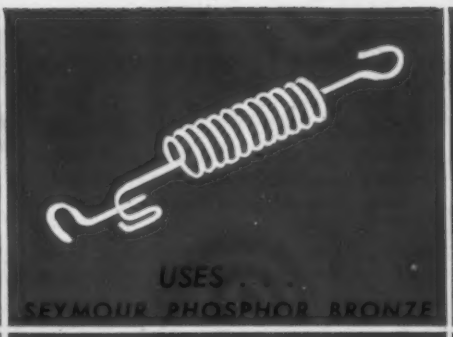
**Duluth, Minn.** — Link-Belt Company. A district sales office has been opened at 422 Board of Trade Building, 301 West First Street, with John E. Morrison as district manager in charge.

**Wilmington, Del.**—Hercules Powder Company, Paper Makers Chemical Department. Earl H. Cone, Jr., has been named sales manager for the newly combined industrial chemicals division and dairy products division, and Don C. Nicholson has been named assistant sales manager of the combined divisions.

(*Please turn to page* 290)



USES . . .
SEYMOUR NICKEL SILVER



USES . . .
SEYMOUR PHOSPHOR BRONZE



USES . . .
SEYMOUR NICKEL SILVER



USES . . .
SEYMOUR NICKEL SILVER



USES . . .
SEYMOUR NICKEL SILVER



USES . . .
SEYMOUR PHOSPHOR BRONZE

# should your product use ours?

If metal is used in your product, Seymour Nickel Silver or Phosphor Bronze may improve its appearance and performance. These special alloys have raised many a product from something "ordinary" to "something special"!

Often the Purchasing Agent can do his company *and* his company's customers a genuine service by specifying Seymour Nickel Silver or Phosphor Bronze instead of being content merely to "repeat last order." Glad to send complete data for your file.

*Other uses of*
**SEYMOUR NICKEL SILVER**

**Flatware, hollowware, surgical appliances, camera parts, resistance units, optical goods, television parts, slide fasteners, costume jewelry, dental instruments, keys, telephone assemblies, screw machine and milled products, architectural trim.**

*Other uses of*
**SEYMOUR PHOSPHOR BRONZE**

**Springs, diaphragms, fuse clips, lock washers, thermostatic controls, studs, electrical devices, nuts, bolts, gears, bushings, pump parts, pinions.**




*Also!*
**SEYMOUR NICKEL ANODES**
**SEYMOUR BRIGHT NICKEL**

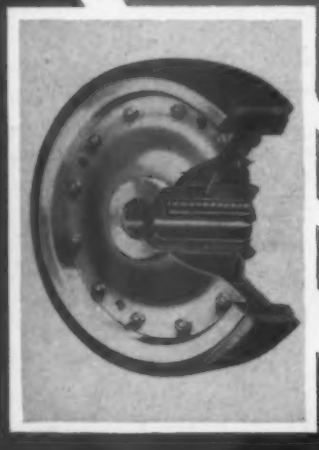
THE SEYMOUR MANUFACTURING COMPANY, SEYMOUR, CONNECTICUT

BUILT TO TAKE PUNISHMENT



Darnell Casters

E-Z ROLL WHEELS



DARNELL CORP. LTD.
LONG BEACH 4, CALIFORNIA

60 WALKER ST., NEW YORK 13, N.Y.
36 N. CLINTON, CHICAGO 6, ILL.

**Charlotte, N. C.**—Graybar Electric Co., Inc., Hamilton Corey has been named branch manager here.

**Philadelphia, Pa.** — White Metal Manufacturing Company. George L. Wheeler has been appointed a sales representative, covering Pennsylvania, Delaware, Maryland, Virginia, South Carolina, North Carolina, Georgia, and Washington, D. C. His headquarters here are at 916 Walnut St.

**Pittsburgh, Pa.**—Graton & Knight Company. David I. McCready has joined the company and will travel the Western Pennsylvania, West Virginia and Virginia territory.

**East Troy, Wis.**—Trent Tube Company. W. C. Christianson has been appointed sales manager of the company, a subsidiary of the Crucible Steel Company of America.

**Chicago, Ill.**—Fairbanks, Morse & Co. T. E. Woodruff, formerly manager of the St. Louis branch house pump department, has been appointed assistant manager of the pump sales division, with headquarters here.

**San Francisco, Calif.** — Landis Tool Company. The C. F. Bulotti Company, 475 Fourth Street, has been appointed distributor for northern California and western Nevada.

**Cleveland, O.** — Greene, Tweed & Co. Walter J. Rooney has been named sales representative in Ohio and eastern Indiana, with headquarters here.

**Pittsburgh, Pa.** — Pyrene Manufacturing Company. Robert J. Hopewell has been named sales representative for western Pennsylvania and West Virginia, with headquarters here.

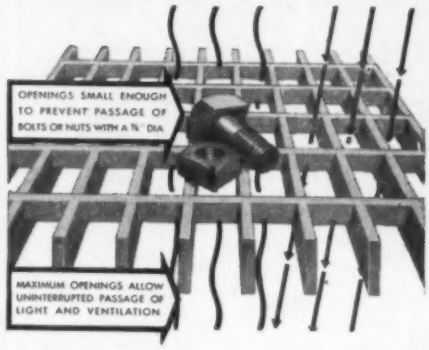
**York, Pa.** — Wright Hoist Division, American Chain & Cable Company, Inc. S. J. Woodworth has been appointed sales manager of the division, to succeed A. R. Haskins, who has resigned.

**Everett, Mass.** — Monsanto Chemical Company. Lloyd D. Shand has been appointed sales representative in the New Jersey territory.

**Edward C. "Ted" Bailey,** has announced the termination of his connection as eastern district manager of the Greenfield Tap & Die Corporation, Greenfield, Mass., after an association of over 31 years. Mr. Bailey, who is temporarily making his headquarters at his home, 1316 Dickerson Rd., West Englewood, N. J., intends to become again associated with the small tool industry after a short vacation.

YOU WILL FIND NEW SUPPLY-SOURCES LISTED EVERY MONTH IN PURCHASING'S CLASSIFIED SECTION! SEE PAGE 324

TRI-LOK RECTANGULAR OPEN STEEL FLOORING




Tri-Lok strength is obtained by truss action through twisted cross-bar, curved in opposite directions at each bearing-bar. Standard openings in Tri-Lok Rectangular Steel Flooring are 1" x 3⅞"—other size openings can be supplied as required.

Diagonal, or Super-Safety U-type Flooring, and stair treads of all types, are available. Bulletin KH1140 describes the construction features of Tri-Lok Open Steel Flooring.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives in Principal Cities

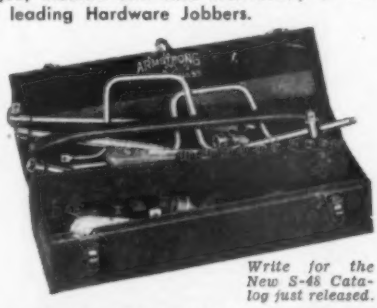
DRAVO

ARMSTRONG



ARMSTRONG ARMALOY SOCKET WRENCHES

Armaloy Socket Wrenches are made of a selected grade Alloy Steel, heat treated, gauged to closest tolerance and beautifully finished in Chrome Plate.
Furnished in five sizes: ¼", ⅜", ½", ¾" and 1" square drive with a complete assortment of drop-forged rachets and driving units. Cataloged, Stocked and Sold individually or in sets by leading Hardware Jobbers.



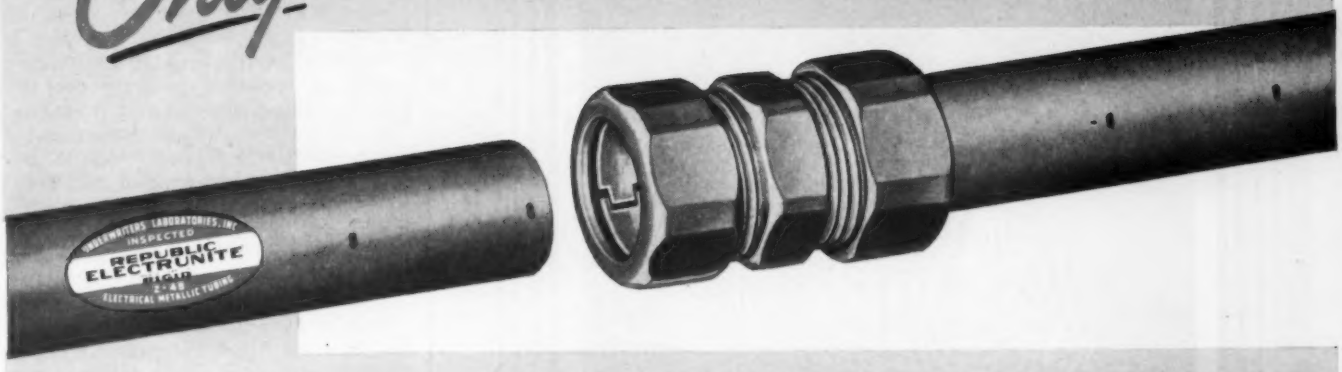
*Write for the New S-48 Catalog just released.*

ARMSTRONG BROS. TOOL CO.

*"The Tool Holder People"*

5203 W. Armstrong Ave., Chicago 30, Ill.
Eastern Whse. & Sales Office:
199 Lafayette Street, N. Y. 12, N. Y.
Pacific Coast Whse. & Sales Office:
1275 Mission Street, San Francisco, California

# *Only* ELECTRUNITE E.M.T.




## ...offers ALL these *Important Advantages*

### INCH-MARKING

An important feature found *only* on ELECTRUNITE E.M.T. Clear, easy-to-read inch and foot marks are stamped on every length of ELECTRUNITE E.M.T. in most popular sizes. Eliminates use of rule for measuring bending and cutting distances.

### KNURLED INSIDE SURFACE

A patented feature which greatly reduces inner wall friction in ELECTRUNITE E.M.T. Actual tests have proved that the knurled inside surface actually makes wire-pulling as much as 30% easier than with ordinary raceway materials.

### NO THREAD-CUTTING

Simple water-tight compression fittings, such as the one shown above, eliminate tedious thread-cutting with ELECTRUNITE E.M.T. One minute with a hack-saw and cut lengths are ready to be installed. With but two fittings—coupling and connector—material can be used with existing threaded type installations. Eliminates use of heavy tools or equipment.

### LIGHT WEIGHT

Because the weight of ELECTRUNITE E.M.T. is less than half that of ordinary threaded-type conduit, this *modern* rigid steel raceway is easier to handle . . . easier to install . . . easier to stock. Particularly on wiring jobs in cramped or hard-to-reach locations, this light weight simplifies installation problems.

### INCH-MARKED* BENDER

Special one-piece ELECTRUNITE Bender is a "must" item for users of ELECTRUNITE E.M.T. Contains built-in instructions which, when used with Inch-Marked* ELECTRUNITE E.M.T. in accordance with the ELECTRUNITE Bending System, enable the user to eliminate common bending problems.

### WIDE DISTRIBUTION

Complete stocks of ELECTRUNITE E.M.T., in sizes ½" to 2" inclusive, are maintained by leading electrical distributors located throughout the United States. Check with your Steel and Tubes representative, for the names of ELECTRUNITE Distributors in your vicinity, or write us *today.*

**REPUBLIC STEEL CORPORATION**
**STEEL AND TUBES DIVISION**
**CLEVELAND 8, OHIO**
Export Dept.: Chrysler Bldg., New York 17, N.Y.

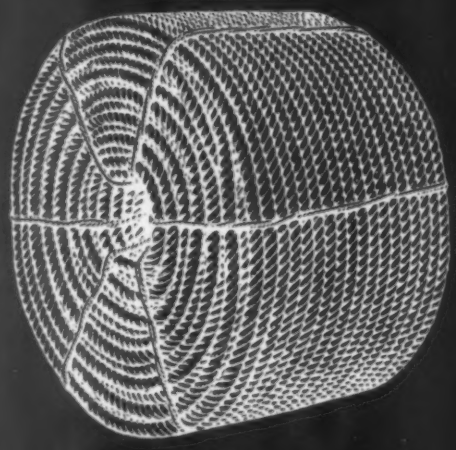
**Trade Mark Reg. U. S. Pat. Off.*

*Republic* REPUBLIC STEEL
ELECTRUNITE E.M.T.

LIGHTWEIGHT THREADLESS RIGID STEEL RACEWAY


*Want Additional Product Information? See Page 19.*

WHITLOCK



*for*

*Ropeconomy*

WHITLOCK CORDAGE COMPANY

46 South Street • New York



# MANY *ways to ship...*



## *but only* ONE RAILWAY EXPRESS

**Before you ship—*Ask yourself these questions*—**

1. **Will the carrier be able to handle my shipment, regardless of its size or weight?**
2. **Is it a *complete* service, with pick-up and delivery?**
3. **Is it a *dependable* service, with national coverage?**
4. **Will I be dealing with *one* responsible carrier?**
5. **Will the charge be *all-inclusive*?**

RAILWAY EXPRESS AGENCY

**You can say YES to every question when you use RAILWAY EXPRESS, America's COMPLETE shipping service, because *only* RAILWAY EXPRESS can offer you ALL these advantages. For *dependable, economical* shipping, where and when you need it, specify and use RAILWAY EXPRESS *every* time!**

**NATION-WIDE RAIL-AIR SERVICE**


## INDUSTRIAL DEVELOPMENTS

**Consolidated Western Steel Corporation,** a United States Steel subsidiary, will build a new electric welded steel pipe mill in Houston, Tex. Preliminary construction work has begun on property near the Houston Ship Channel, and it is expected that the new plant will be in operation in the spring of 1950. The new facilities will provide an annual capacity of 100,000 net tons of 24" diameter and larger electric welded and expanded steel pipe. The new plant's capacity will be approximately 50 miles of large diameter pipe a month.

**Reichold Chemicals, Inc.,** Detroit, Mich., and Diamond Alkali Company, Cleveland, O., have announced a cooperative venture for the further development of Reichold's phenol operation in Tuscaloosa, Ala. It is contemplated that the physical assets and operation of the plant will be transferred to a new Alabama corporation. Diamond Alkali has entered into a financial arrangement with Reichold which will provide funds for the extensive modification and improvement of the processes principally employed at the plant.

**The Patterson Foundry & Machine Company,** East Liverpool, O., has announced the opening of a new plant at Toronto, Can. The plant was erected for the company's subsidiary, The Patterson Foundry & Machine Company (Canada) Ltd.

**Randall Graphite Bearings, Inc.,** Chicago, Ill., has purchased the foundry and machine shop of Shook Bronze Corporation, Lima, O.

**The Electric Storage Battery Company** recently opened a new plant devoted to the manufacture of Exide batteries at 1246 Allene Avenue, S. W., Atlanta, Ga.

**The Matheson Company, Inc.,** East Rutherford, N. J., has completed a merger with the Royal Organic Chemical Company, Roselle, N. J. All operations will be transferred to the Matheson plant at East Rutherford.

**A. E. Staley Manufacturing Company** has begun construction of a new soybean extraction plant at Decatur, Ill. The plant, which is expected to cost in excess of $2,500,000, will be completed next July.

**Electric Auto-Lite Company,** Toledo, O., has completed what it calls the most modern automobile battery plant in the world at Paramount, in the industrial district southeast of Los Angeles, Calif.

**Hinde & Dauch Paper Company,** Sandusky, O., is expanding its facilities at Richmond, Va., with the construction of a new factory and office building, which is scheduled for completion by January 1, 1950. The new plant will produce double-faced corrugated board, corrugated boxes, and corrugated packing materials.

(*Please turn to page* 294)

# The Certified Zinc Alloy Plan for Die Casting...



The Official ADCI quality Certification SEAL




The Official Certificate

## What the Plan is

The Certified Zinc Alloy Plan is a voluntary project whereby members producing zinc alloy die castings agree to submit official samples at regular intervals to the Approved Laboratory of The American Die Casting Institute in accordance with regulations set forth by the Institute.

The Laboratory by the spectrographic, analytical method determines whether the sample is "on grade" (that is, if it conforms to the chemical composition limits specified in ASTM Standard Specifications).

Provision is made for an accredited representative to visit plants of licensees without previous notice and to select at random samples from any machine in operation.

As long as samples submitted meet "on grade" requirements members may use The Quality Certification Seal.

*{The plan is covered in detail in a bulletin available on request to the ADCI}*

## What it Means to Purchasers of Die Castings

When doing business with any of the licensees listed below a manufacturer can be assured that the alloy used is pure and meets ASTM specifications.

In brief, the Plan provides a standard of metallurgical quality which never before has been offered to industry.

## LICENSEES UNDER THE PLAN AS OF OCTOBER 1, 1949

A & A Die Cast and Plastic Molds Co., West Los Angeles, Calif.
The Accurate Die Casting Co., Cleveland, Ohio
Advance Pressure Castings, Inc., Brooklyn, N. Y.
Advance Tool & Die Casting Co., Milwaukee, Wis.

Badger Die Casting Co., Milwaukee, Wis.

Central Die Casting & Mfg. Co., Inc., Chicago, Ill.
Cleveland Hardware & Forging Co., Cleveland, Ohio
Congress Drives Division, Tann Corp., Detroit, Mich.
Continental Die Casting Corp., Detroit, Mich.
Division of F. L. Jacobs Co.
Crown City Die Casting Co., Pasadena, Calif.

Doehler-Jarvis Corp., Pottstown, Penna.
Doehler-Jarvis Corp., Toledo, Ohio
Doehler-Jarvis Corp., Chicago, Ill.
Dollin Corporation, Irvington, N. J.
Du-Well Metal Products, Inc., Bangor, Mich.

Fanarc Manufacturing Co., Inc., Whittier, Calif.
Federal Die Casting Co., Chicago, Ill.

Glenvale Products Corporation, Detroit, Mich.
Globe Imperial Corporation, Rockford, Ill.
C. M. Grey Mfg. Co., East Orange, N. J.

Harvill Corporation, Los Angeles, Calif.
Harvill Midwest Corporation, Chicago, Ill.
Heick Die Casting Corporation, Chicago, Ill.
Hilfinger Corporation, Toledo, Ohio
The Hoover Company, North Canton, Ohio

Kamin Die Casting & Mfg. Co., Chicago, Ill.
Kiowa Corporation, Marshalltown, Iowa

Madison-Kipp Corporation, Madison, Wis.
Milwaukee Die Casting Co., Milwaukee, Wis.
Modern Die Casting Corp., Chicago, Ill.
Monarch Aluminum Mfg. Co., Cleveland, Ohio
Mt. Vernon Die Casting Corp., Mt. Vernon, N. Y.

New Products Corp., Benton Harbor, Mich.

Paragon Die Casting Co., Chicago, Ill.
Parker White Metal Co., Erie, Penna.
Peckinpaugh Metals Corp., Cleveland, Ohio
Precision Castings Co., Inc., Syracuse, N. Y.
Precision Castings Co., Inc., Cleveland, Ohio
Pressure Castings, Inc., Cleveland, Ohio

Racine Die Casting Co., Racine, Wis.
Reed Metal Crafts, Chicago, Ill.

St. Louis Die Casting Corp., St. Louis, Mo.
Schultz Die Casting Co., Toledo, Ohio
Sterling Die Casting Co., Inc., Brooklyn, N. Y.
Stewart Die Casting Div. of Stewart Warner Corp., Bridgeport, Conn.
Stewart Die Casting Division of Stewart Warner Corp., Chicago, Ill.
Stroh Die Moulded Casting Co., Milwaukee, Wis.
The Superior Die Casting Co., Cleveland, O.

The Tool-Die Engineering Co., Cleveland, Ohio
Twin City Die Casting Co., Minneapolis, Minn.

Union Die Casting Co., Ltd., Los Angeles, Calif.
Universal Die Casting Co., Los Angeles, Calif.

Wells Die Casting Co., San Francisco, Calif.
Western Die Casting Co., Emeryville, Calif.

**AMERICAN DIE CASTING INSTITUTE, INC.**
366 MADISON AVENUE NEW YORK 17, N. Y.

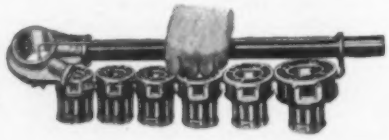
# QUICK *Get-ready* WHEN YOU THREAD 1/8" TO 2" PIPE




## RIDGID No. 00R Drop-Head Dies for clean threads fast

● You can't beat the quick get-ready of these little ratchet dies — snap in the size die head you want and its precision-cut tool-steel dies are ready to cut smooth perfect threads. Die heads can't fall out, dies reverse easily for close-to-wall work. Conduit dies on request. Ask your Supply House for work-saver RIDGIDS No. 00R, 111R or 12R.

*Free carrier for any set.* ➡



RIDGID

WORK-SAVER PIPE TOOLS

THE RIDGE TOOL CO. • ELYRIA, OHIO


**John Nooter Boiler Works Company,** St. Louis, Mo., has changed its name to Nooter Corporation. Management and personnel remain the same.

**A. Leschen & Sons Rope Company,** St. Louis, Mo., has announced the election of Arthur A. Leschen as president, and Douglas W. Vernon as vice-president and general manager.

**Link-Belt Company,** manufacturer of chains, elevators, conveyors, and power transmitting machinery, has opened a new manufacturing plant, built on a 10-acre plot of ground at 3202 South Wayside, Houston, Tex.

**Victor Equipment Company,** San Francisco, Calif., has purchased the business and assets of Mills Alloys, Inc., Los Angeles, Calif. Mills Alloys is a manufacturer of all types of blasting nozzles and all types of tungsten carbide hard-surfacing rod.

**Clark Equipment Company** has opened a new fatcory at Jackson, Mich., which will bring the production of the company's



**Clark's new Jackson, Mich. plant**

line of transmissions, farm tractor drives, gears and forgings under one roof. Clark also operates plants at Buchanan, Battle Creek, and Berrien Springs, Mich.

**Chicago Pneumatic Tool Company** is nearing completion of its new $5,000,000 plant in Utica, N. Y. To meet the problem of production lines for two basically different types of tools, two six-acre sections were laid out first. A horseshoe production line was then laid out for each operation, and the plant was actually built around the whole.

**The Cincinnati Electrical Tool Company** has acquired the Hisey-Wolf Machine Co., Cincinnati, O., manufacturer of industrial grinding machines, and buffing and polishing lathes.

**Elliott Company,** Jeannette, Pa., has acquired the business and assets of the Crocker-Wheeler Electric Manufacturing Company. Crocker-Wheeler will operate as a division of Elliott Company. With the addition of the Crocker-Wheeler Division, Elliott Company now has a complete line of a-c and d-c motors ranging in size from 1 hp up to 25,000 hp.

**Bingham-Herbrand Corporation,** Toledo and Fremont, O., has acquired the assets of Superior Manufacturing, Cleveland, O. Superior will operate as a part of the Herbrand Division.

(*Please turn to page* 296)

# HOW TO SAVE UP TO 80% ON PAINTBRUSH COSTS

## Brushes bristled with Du Pont nylon lead way to substantial savings in industrial maintenance

Take four-fifths of whatever amount your firm has spent in the past year for paintbrushes with ordinary bristles. The result will be a fair estimate of how much your firm can *save* in a year with *nylon*-bristled paintbrushes.

Such savings are possible because nylon bristles outlast others up to five times, while returning equally good service. Properly made, nylon-bristled paintbrushes make excellent painting tools for work on both rough and smooth surfaces. They are extremely resistant to wear, paint vehicles and solvents. Factory after factory across the country is using brushes bristled with nylon for savings in maintenance painting.

But remember . . . make sure you get genuine nylon. If the word "nylon" is not stamped plainly on the handle, the brush is not made with nylon!

### FREE BOOKLET GIVES THE FACTS

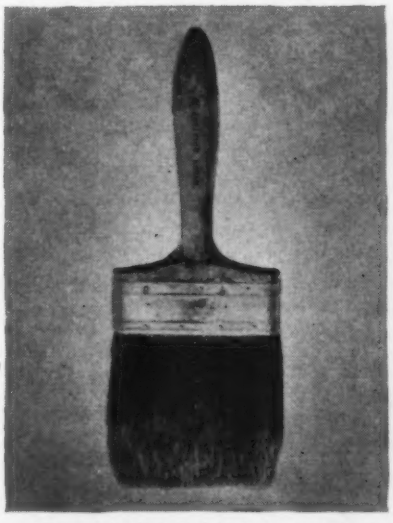
It will pay you to look into nylon-bristled paintbrushes for your firm NOW. They're made by leading paintbrush manufacturers. If your brush supplier cannot meet your needs, just write us. Meanwhile, clip the coupon for copies of our 16-page illustrated booklet, "How You Can Save Money on the Job with Paintbrushes Bristled with Du Pont NYLON," for distribution to painters employed by your firm. This booklet is filled with facts on the use, care and economy of nylon-bristled paintbrushes.



**AFTER 5 MONTHS' SERVICE** for a prominent railroad on all types of paint jobs, this nylon-bristled brush looks almost as good as new.



**WORKED 6 DAYS A WEEK** for 8 months by a Cleveland paint company, this nylon-bristled brush still had most of its life to live.



**AFTER PAINTING 3500 to 4000 oil** drums for a New York City oil company, this nylon-bristled brush shows it's still in excellent condition.



**USED ON CONCRETE,** stone and wood for 8 months by a midwest transportation company, this nylon-bristled brush shows very little wear.

DU PONT
NYLON BRISTLES

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

**CLIP COUPON AND MAIL TODAY!**

E. I. du Pont de Nemours & Co. (Inc.)
Plastics Dept., Room 9523-A Nemours Bldg., Wilmington 98, Del.

Please send ( ) copies of your illustrated book, "How You Can Save Money on the Job with Paintbrushes Bristled with Du Pont NYLON."

*Name*_____

*Firm*_____

*Address*_____

# Polyken®

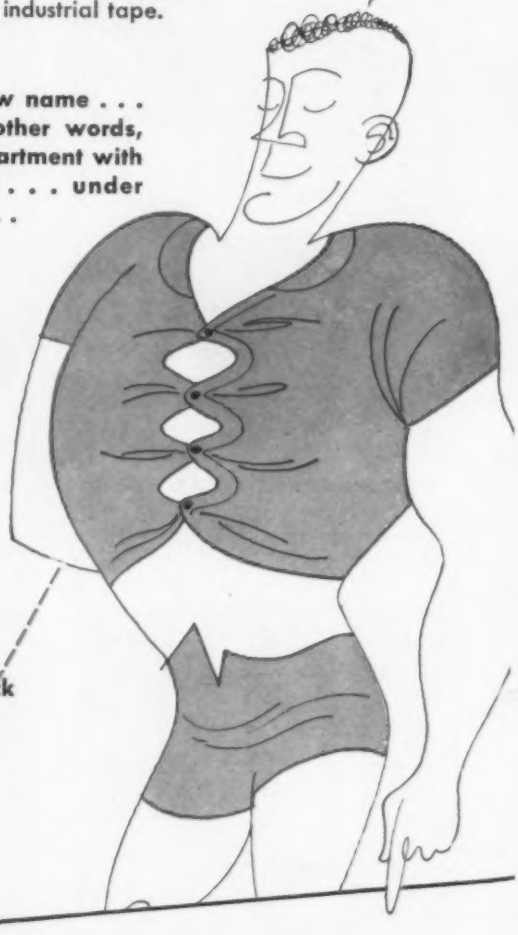
## ...is my *new* name*

Everybody outgrows his britches sometime. I did it faster than most... thanks to your ever-increasing demands for Bauer & Black industrial tape.

**So now I'm getting a new name... and clothes that fit. In other words, we've formed a new department with separate headquarters... under our own trade name... POLYKEN.**

As new uses for industrial tapes are developed, we will continue to add specialty and standard tapes to our already broad line. And as an expanded department, we want to continue helping you in industry to speed and improve methods... cut costs.

**Accordingly, Bauer & Black is pleased to announce that...**



***BAUER & BLACK Industrial Adhesive Tape will now be sold under the following trade name:**

Polyken® INDUSTRIAL TAPE

DEPARTMENT OF BAUER & BLACK
DIVISION OF THE KENDALL COMPANY
222 W. ADAMS ST., CHICAGO 6

Dozens of POLYKEN tapes for hundreds of diversified jobs.


**V & O Press Company,** Division of Rockwell Manufacturing Company, Hudson, N. Y., has purchased the patents, patterns, tools and other equipment, together with the inventory and all assets of a punch press feeding device known as Feed-O-Matic, from the Covert Manufacturing Company, Troy, N. Y.

## GAIR-REYNOLDS FOILINE FOLDING CARTON PROJECT ANNOUNCED

Announcement is made by the Reynolds Metals Company and the Robert Gair Company, Inc., of the completion of arrangements through which the foil manufacturing activities of the Reynolds Metals Co. will be carried on by Robert Gair Company to produce an expanded line of packaging to be known as "Gair-Reynolds Foiline" folding cartons.

The operations will be conducted by Gair at its folding carton plant at Piermont, N. Y. In addition to the territory East of the Mississippi River which is normally served by Gair's sales organization, the Reynolds Metals Co., through its sales outlets will extend the sales territory of the Gair-Reynolds Foiline cartons to the Pacific Coast.

## DIAMOND ALKALI CHANGES TRADENAME OF CALCIUM CARBONATES

Announcement is made by the Diamond Alkali Company, Union Commerce Building, Cleveland, Ohio, that the tradename of "Swansdown Brand" general-purpose dense precipitated calcium carbonates has been changed to "Non-Fer-Al Brand". The name was adopted because the company feels that "Non-Fer-Al" describes more accurately the low iron and aluminum content of the products. Another reason for the change was the use of the name "Swansdown Brand" to designate other articles of commerce.

## DISTRIBUTE DIRECTORY OF FEDERAL PURCHASING OFFICES IN CHICAGO

Military and civilian branches of the federal government maintain a total of 144 purchasing offices with which Chicago firms can do business, Leverett Lyon, chief executive officer of the Chicago Association of Commerce and Industry, announced recently.

The Association has compiled a 23-page directory of federal purchasing offices for the benefit of Chicago companies, Lyon said. The federal offices listed in it are classified according to the materials they purchase and also according to their governmental organization. The foreword by Lyon suggests ways in which companies can make the most of their sales opportunities. Further suggestions on doing business with various agencies are contained in notes at the end of the list.

Copies of the directory are being distributed by the Association without charge, in response to applications upon company letterhead.

(*Please turn to page* 298)

# SAVES UP TO 60%

## by using Bemis TITE-FIT TUBING

*This recent letter from a Tite-Fit Tubing customer shows what big savings are realized when this waste-eliminating method is used.*

This versatile tubing fits almost any shape and a wide variety of package sizes. One roll may cover many different diameters and lengths without waste.



**Thermoid Company**
AUTOMOTIVE - INDUSTRIAL - OIL FIELD - TEXTILE PRODUCTS
TRENTON - NEW JERSEY - USA

Bemis Brothers Bag Company
Second Avenue and 51st Street
Brooklyn 32, New York

Gentlemen:

We have used Tite-Fit Tubing since its inception over 10 years ago. Accurate time study figures show our savings in labor costs on regular packaging operations to be as high as 33% to 60%.

In addition, Tite-Fit Tubing has also provided the superior covering that is required for our export packaging. We are particularly pleased by the favorable comment we receive from our customers on the neat, secure bales in which our merchandise is shipped.

Very truly yours,

Ward A. Hamm

Traffic Manager,
Thermoid Company

Perhaps you will find equally large savings with Tite-Fit Tubing. It's worth investigating. Get the facts. Mail the coupon now.

**BEMIS BRO. BAG CO.**
Brooklyn 32, New York

Also manufactured by Canadian Bag Co., Ltd., Montreal, and Ontario Bag Company, Port Colborne, Ontario.

**MAIL COUPON NOW**

BEMIS BRO. BAG CO., 5126 Second Ave., Brooklyn, N.Y.

☐ Send descriptive folder on TITE-FIT TUBING
☐ Send sample. Our packages are approximately_____inches in circumference. (Please specify).

*Name*_____
*Firm*_____
*Street*_____
*City*_____ *Zone*_____ *State*_____



# SPRING LOCK WASHERS

*with "Controlled Tension" built in*

FOR LONGER LASTING SERVICE...BETTER QUALITY

Diamond G "Controlled Tension" in every spring lock washer makes assemblies tight . . . keeps them right. Garrett's exclusive "Controlled Tension" is the secret of the success of Diamond G Spring Lock Washers . . . the result of absolute, precision control in manufacturing. Every lot of Diamond G Spring Lock Washers is "torture-tested" to assure maximum quality and peak performance. Write for Lock Washer Booklet.

WASHER FOR EVERY NEED

Whatever your needs in spring lock washers, there's a Diamond G to answer it—high carbon steel, bronze, aluminum, stainless steel and monel metal spring lock washers finished or plated with cadmium, nickel, brass, copper or other finishes . . . ***plus the new Diamond G Aluminum Spring Lock Washer that combines lightness of aluminum with the strength and durability of steel.***

Garrett also manufactures a complete line of flat washers, spring washers, springs, stampings, hose clamps, snap and retainer rings. Write for technical booklet on small parts.

**DIAMOND G PRODUCTS**

Manufactured by

**GEORGE K. GARRETT CO., INC.**

**1421 Chestnut St., Phila., Pa.**



**GARRETT**

MANUFACTURERS OF SMALL PARTS


## NEW D-C WELDER USES PLATE TYPE RECTIFIERS

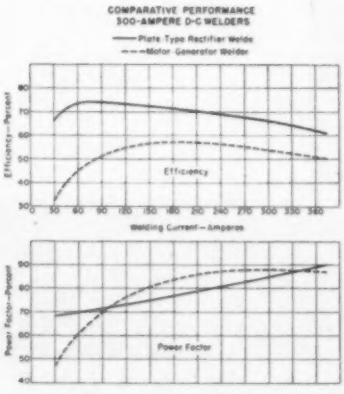
A welding machine combining the desirable characteristics of d-c welding with the advantages of a-c welding machines, has been developed by the Westinghouse Electric Corporation. The welder uses high voltage selenium rectifiers which have proved reliable in many industrial applications such as battery chargers, electro-plating, and as conversion units for supplying power to d-c motors.



No current-carrying parts are exposed.

The efficiency of the new welders at rated load is placed at 66 percent as compared to 54 percent for an average motor-generator welder. This efficiency increases at reduced load conditions and reaches 73% at 20% rated load.

Experience indicates that the average welding machine is actually loaded only one-third of the time and idle two-thirds of the operating time. The new welder has a greatly reduced no-load power consumption. The no-load loss of the new 300-ampere welder is 500 watts as compared to 2480 to 3600 watts for the conventional welder. The no-load kva input of the new welder is 0.67 as compared to 7.1 to 7.7 kva for a typical motor-generator welder. The greatly reduced no-load power consumption as well as the reduced demand kva may mean real savings in power costs.




Comparative performances (efficiency and power factor) of a plate type rectifier welder and a motor generator welder

(*Please turn to page* 300)


**ARMSTRONG-BRAY**



**THE RIGHT FASTENER FOR EACH TYPE BELT**

WIREGRIP Belt Hooks with extra (patented) blue aligning cards—that assure better alignment with less hook loss—6 sizes.

STEELGRIP Flexible Lacing, applied with a hammer, clinches over and protects ends of belt. Boxed in long lengths.

PLATEGRIP Fasteners for . . . Conveyor Belts. Make strong dust-tight joints in belts of any width. Spread tension uniformly. Allow natural troughing of belt. Operate smoothly over flat, crowned or take-up pulleys. Sizes for belts from ¼" to 1½" thick. Easily applied.


WIREGRIP


STEELGRIP


PLATEGRIP


FLEXGRIP


SUREGRIP

*Write for catalog*

**ARMSTRONG-BRAY & CO.**

*The Belt Lacing People*

**5368 Northwest Hwy.** **Chicago, Illinois**



*Take a tip from*

GEORGE A. PARK

SALES MANAGER
EASTERN REGION
ABRASIVE DIVISION

NORTON COMPANY
WORCESTER 6, MASS.




George A. Park, Sales Manager, Eastern Region, Abrasive Division, Norton Company (right), points out a feature of Norton grinding wheels to L. H. Bittner, Vice President, Charge of Purchases, Allegheny Ludlum Steel Corporation.

## "To keep management sold, keep the P.A. informed"

"The modern Purchasing Agent is an important member of the management team. Buying is only *one* of his responsibilities. He must be posted on price trends, inventory policies, new materials and production methods, and countless other factors which reflect opportunities for better operating economy. Our policy is to keep the Purchasing Department fully informed," says Mr. George A. Park, Sales Manager, Eastern Region, Abrasive Division, Norton Company, largest producer of abrasive products.

There aren't enough hours in a day to keep industry's buyers fully informed *personally,* as sales executives know. That's why Norton Company, and more than 600 other sales-alert manufacturers, find PURCHASING an indispensable sales ally. Purchasing executives turn regularly to the editorial and advertising pages of this, their own trade paper, for complete, accurate, up-to-the-minute information — in order to plan more effectively as members of the management team.

Today, with sales resistance growing, a sales force needs all the assistance it can get. Consistent, informative advertising in PURCHASING becomes a forceful part of your selling effort — because it's the *one* national magazine tailored to the exact requirements of the purchasing function, read regularly by P.A.'s controlling 85% of industry's purchases! For details, write PURCHASING, 205 East 42nd St., New York 17, N. Y. Offices in Chicago, Cleveland, Dallas, Los Angeles.

PURCHASING

ABC

A CONOVER-MAST PUBLICATION

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES

*New!* GENERAL ELECTRIC

# COMMERCIAL VACUUM CLEANER

WEIGHS ONLY 23½ LB

LIGHTWEIGHT
POWERFUL
COMPACT

WET OR DRY PICK UP



Here is a vacuum cleaner which is truly "heavy duty," yet light enough to be easily operated by a woman.

Moderate in cost, it comes complete with tools for dry pickup and . . . available at small extra cost are accessories by which the cleaner can be converted to *wet as well as dry pickup!*

**SOME SPECIFICATIONS** — 15½ in. high, 13¼ in. diameter; weight 23½ lb.; General Electric universal-type motor, 110 volt a-c/d-c; dirt capacity 5 qt.; cord—20-ft. rubber, covered with plastic plug; finish—two-tone gray, chrome fittings.

Use this cleaner for these and other difficult jobs:

- Thorough cleaning of carpets and runners
- Taking up mop water, shampoo suds, etc.
- Dusting of hard-to-reach areas
- Removing coarse litter, tracked-in gravel



MODEL AV1 189WP with tools

Comes complete with tools for dry pickup. For wet pick-up, accessories shown immediately below cleaner (wet pickup bag, rubber squeegee for bare floors, metal squeegee for rugs) are offered at small extra cost.



**MAIL COUPON TODAY!** A new catalogue, just off the press, gives complete information about Model AVI 189WP, as well as other cleaners in General Electric's heavy-duty line. Send for it now.

**Commercial Vacuum Cleaners**

**GENERAL ELECTRIC**

General Electric Company, Dept. 22-1216
1285 Boston Avenue, Bridgeport 2, Conn.

Without obligation, please send the new catalogue and complete information on the new Model AVI 189WP.

Name.....

Firm.....

Address.....

City..... State.....


(*Continued from page* 298)

The new machine features extremely rapid response to the changes in current and voltage conditions produced by the welding arc. Overshoots and undershoots resulting from changes in load requirements are small and of short duration. Operation is especially good when welding with electrodes at low current densities. The welder offers single-control current adjustment with welding characteristics equivalent or superior to dual control machines.

The extreme simplicity of the welder and its lack of moving parts, the elimination of brushes and brush holders, and shunt and series fields, greatly simplifies the maintenance and repair part problem.

The new welders are rated in accordance with NEMA standards for industrial type, single operator arc welders.

For further information write Westinghouse Electric Corporation. P. O. Box 868, Pittsburgh 30, Pa.

## NEW BOOK ON VARNISHED INSULATIONS FOR ELECTRICAL WORK

Book bearing the title "The V. I. Story, Varnished Insulations in Electrical Engineering", 88 pages, 7½" x 7½" format, has been published by the Varnished Fabric & Paper Section of the National Electrical Manufacturers Association, 155 East 44th Street, New York, 17, N. Y.

Written by David O. Woodbury, electrical and research engineer and author, the publication is designed to serve the electrical industry at all levels as an authoritative reference book on varnished insulations. Sources for the material were the major varnished insulation manufacturers.

The book covers the nature and purpose of varnished insulations, their origin and development and their use in rotating apparatus, transformers, cables, power distribution systems, motor controllers, high tension magnetos and electronics equipment.





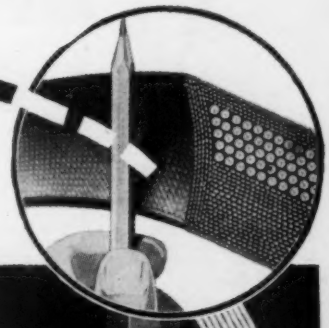

You can actually *feel* the sides of a belt *change shape* as the belt bends.

## In Two Minutes You Can See Exactly How . . .

# The Concave Side

(U.S. Patent No. 1813698)

## SAVES Your Transmission DOLLARS



Take *any* V-belt in your hands and bend it as it bends in going around a pulley. You will see that the top of the belt, being under *tension*, grows *narrower*. The body, under compression, *widens*. The sides *bulge out*.

This shape change—in a *straight-sided* V-belt—is shown in Figures 1 and 1-A, below.




Straight-Sided V-Belt




How Straight-Sided V-Belt Bulges in Sheave-Groove.

Now look at Figures 2 and 2-A. There you see how the *same shape change* affects the V-belt built with the precisely engineered *Concave Side* (U.S. Patent No. 1813698).




Gates Vulco Rope with Concave Side.




No Side Bulge. Precise Fit in Sheave Groove.

The top of the belt narrows, the body widens. But the sides *merely straighten—and* the new shape *exactly fits* the sheave groove!

*Two* savings result. (1) Uniform side-wall wear—*longer life!* (2) Full side-wall grip on the pulley carries heavier loads and *sudden load increases* without slipping; saves belts, saves *power!*




REG. U. S. PAT. OFF.

The Mark of SPECIALIZED Research

### The Concave Side is *MORE IMPORTANT NOW Than Ever Before*

Because the sides of a V-Belt are what actually drive the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley directly through the belt's sidewalls.

Now that Gates SPECIALIZED Research has made available to you SUPER Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side is naturally more important in conserving belt life today than ever before.

4910

**GATES VULCO ROPE DRIVES**

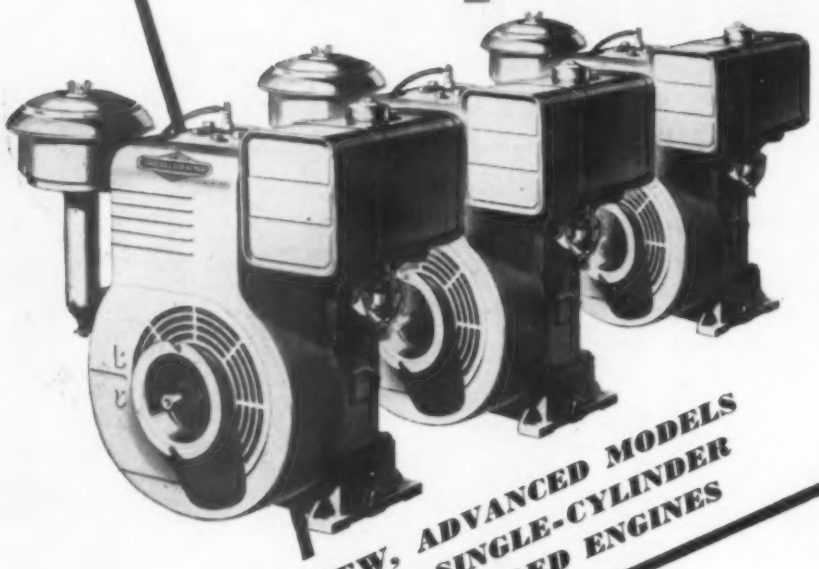
Engineering Offices and Jobber Stocks IN ALL INDUSTRIAL CENTERS of the U. S. and 71 Foreign Countries

THE GATES RUBBER COMPANY
DENVER, U.S.A.
*The World's Largest Makers of V-Belts*



*Want Additional Product Information? See Page 19.*

# From Air-Cooled Power Headquarters



. . . 3 NEW, ADVANCED MODELS OF 4-CYCLE, SINGLE-CYLINDER AIR-COOLED ENGINES

**Compact — powerful — in brilliant modern design — incorporating many important improvements — these new Briggs & Stratton models are perfected products of the world's largest builders of 4-cycle air-cooled single-cylinder engines, resulting from an experience record spanning more than 30 years and a production record of more than 4 million engines.**

**These new engines set new standards of value, dependability and performance as "preferred power" for machines, tools and equipment used in industry, and construction, by railroads and on farms.**

**Complete technical information is available on these new Briggs & Stratton single-cylinder 4-cycle air-cooled gasoline engines:**

**MODEL "9" 3.1 H.P.**

**MODEL "14" 5.1 H.P.**

**MODEL "23" 8.25 H.P.**

**BRIGGS & STRATTON CORPORATION, MILWAUKEE 1, WIS., U.S.A.**





## ADHESIVE FOR AUTOMATIC GLASS CONTAINER LABELING

A clean, efficient operating adhesive for automatic equipment is now available for labeling glass containers under U. S. Federal Specification U-M-186. It is known as Impervo 44, and made by National Adhesives, 270 Madison Ave., New York, N. Y. The new adhesive is said to be of particular interest to manufacturers who have been compelled to either apply labels by hand or reduce the speed of their labeling equipment due to the poor machinability of the adhesives which heretofore complied with this exacting specification. Best results are obtained when machines are adjusted to apply a minimum film, and webbing and smearing are avoided. The adhesive sets rapidly and labeled containers can be nested immediately without hazard of label slippage or scuffing. The adhesive is recommended for use on all automatic and semi-automatic labeling equipment.

It is reported that while this adhesive was originally designed for labeling bottles to be immersed in ice water, repeated tests have shown the labels to be so firmly adhered even after two weeks immersion in water at 70° F., that a tearing bond was obtained.

* * *

## STRESS NEED FOR IMPROVED EXPORT PACKAGING

Estimated losses of United States exports due to inadequate or improper packaging of goods for foreign shipment may total as much as a billion dollars annually, the Office of International Trade, U. S. Department of Commerce, reported recently.

Many U. S. industries are losing business abroad because their goods, although superior in quality, are arriving at foreign destinations in poor condition, according to a new report in OIT's "World Trade in Commodities" series.

The report, which contains a digest of international developments in the container industry, also includes a comprehensive description of some of the complaints received through the U. S. Foreign Service concerning faulty packaging of our exports.

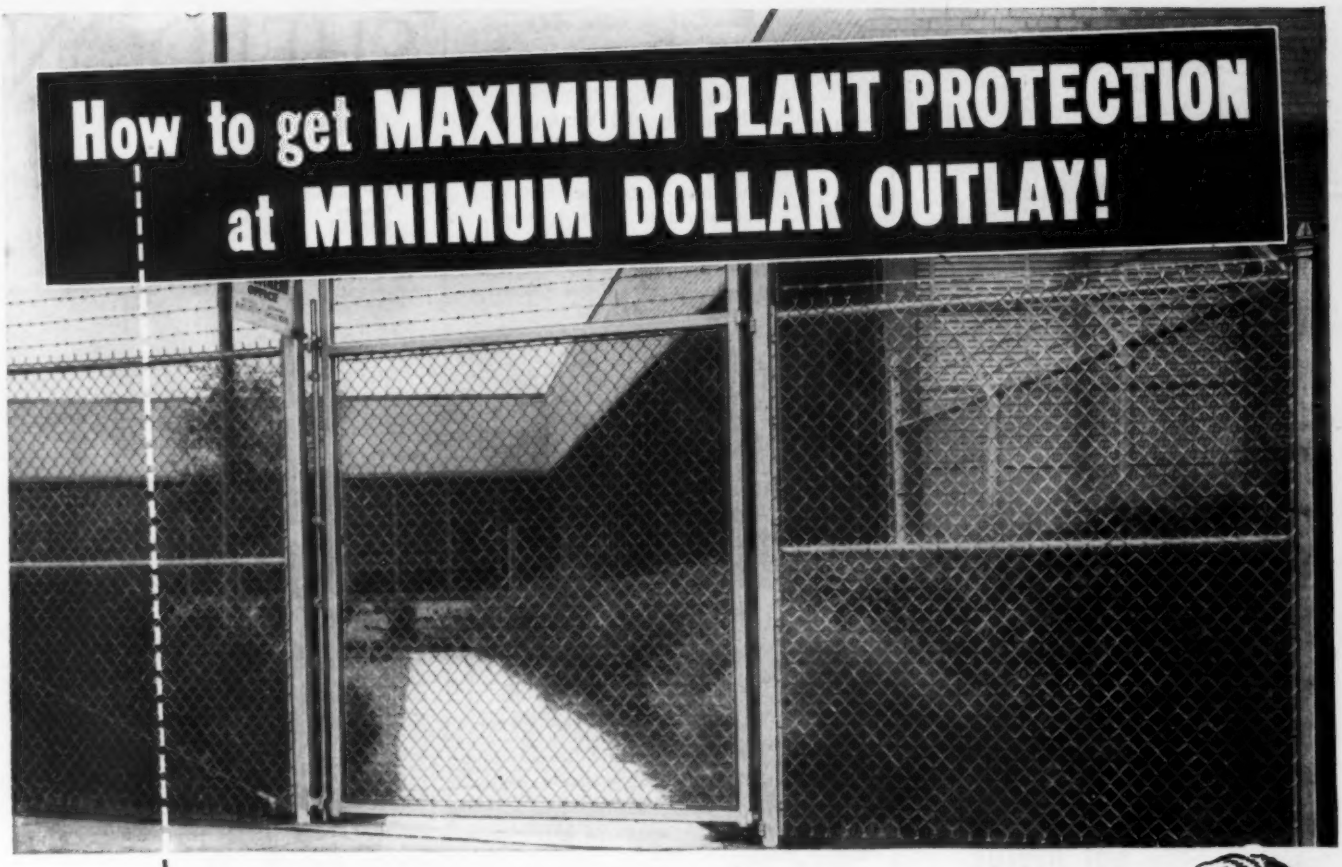
U. S. exports of containers in 1948, the report says, amounted to approximately $88,000,000. Although this is about 13 percent less than the all-time high reached in 1947, it is more than 400 percent greater than the value of our container exports in 1938, the last normal prewar year.

In discussing recent foreign developments in production and use of containers, the report refers to glass containers, tin cans, paper bags, wooden containers, gas cylinders, cardboard containers, and miscellaneous containers and packing and shipping materials.

A description of recent container developments in the following foreign countries is included: Australia, Belgium,

(*Please turn to page* 304)

# How to get MAXIMUM PLANT PROTECTION at MINIMUM DOLLAR OUTLAY!



## CALL YOUR TRAINED ANCHOR FENCE ENGINEER!



A PROTECTIVE fence is as much a part of an industrial plant as the buildings themselves. That's why Anchor Fence engineers are specifically trained in solving industrial problems. They have the "know-how" to give sound advice that buys you better protection at lower cost. For the latest information on industrial fencing, look in your phone book now and call a trained Anchor Fence engineer. No obligation, of course.




**WRITE TODAY** for our folder, "Anchor Fences." Shows the many applications of fencing to industrial plants, schools, public properties, etc. Write to: ANCHOR POST FENCE DIVISION, Anchor Post Products, Inc., 6615 Eastern Ave., Baltimore 24, Md.

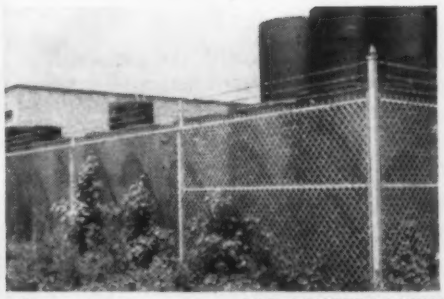
**Anchor Fence**

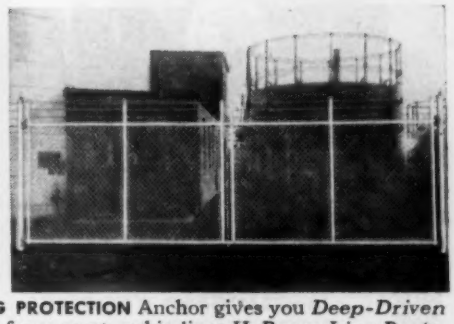
Nation-wide Sales and Erecting Service

**Get the answers to questions like:**

1. How much protection do we need?
2. What height fence is required to protect our products?
3. Do we need barbed wire protection?
4. What sizes and types of gates would best suit our needs?
5. How should we locate gates and fence for best protection?







**ANCHOR CHAIN LINK FENCE** is the best way to shut out trespassers, snoopers and all kinds of vandals. Also controls employee and motor traffic in and out of your plant a lot more efficiently, as well as protecting outdoor storage of materials and supplies . . . to free valuable plant space for production purposes.

**FOR LONGER-LASTING PROTECTION** Anchor gives you *Deep-Driven Anchors* to hold the fence erect and in line; *H-Beam Line Posts*, self-draining, rust-free rigid; *Square Frame Gates*, free from warping and sagging; *Square Terminal Posts*, providing strength, beauty and non-climbability.



**A Watchman without a DETEX GUARDSMAN is like a Pistol without a trigger ...ornamental, but not useful.**

The DETEX Guardsman gives you a continuous mechanical check on your Watchman's activities—especially on long weekends and during extended plant closings. You know if he sleeps, shirks or skips rounds.

There's no need for a supervisory employe to return to the plant to change the clock dial. The GUARDSMAN operates on roll tape—for as long as 96 hours, if necessary—without the necessity of cutting the tape.

Write for FREE folder.



**DETEX**

PATROL
ALERT
ECO
NEWMAN
GUARDSMAN

**WATCHMENS CLOCKS**

DETEX WATCHCLOCK CORPORATION
Dept. P-11
76 VARICK STREET, NEW YORK 13, N.Y.
Sales and Service in All Principal Cities


(*Continued from page* 302)

Canada, Cuba, El Salvador, Hong Kong, India, Indochina, Mexico, Netherlands, Peru, Philippines, Poland, Portugal, Turkey, United Kingdom, and Venezuela.

The report stresses the importance of proper packaging of U. S. goods for foreign shipment and lists the following points for consideration when a decision is being made as to the most serviceable container for export use:

(1) Nature and value of the goods to be shipped.

(2) Unloading facilities at the port of discharge.

(3) Inland transportation system in the country of destination.

(4) Climatic conditions en route and in the country of destination.

(5) Amount and nature of transshipping that may be required en route to the final port of discharge.

(6) Probable pilfering owing either to nature of goods or the country of destination.

## QUALITY CONTROL COURSE ANNOUNCED BY HUNTER SPRING

Announcement is made by the Hunter Spring Company of Lansdale, Pa, of the opening of the third season for the two technical courses it offers to purchasing agents, industrial engineers, inspectors, and other on the subjects of "Quality Control by Statistical Methods" and "Modern Spring Design." The courses are given in two-day schools conducted every week and alternating between the subjects of quality control and inspection, and spring design and specification. A new feature is the addition of basic design and application information regarding the new "negative-gradient" type of elastic member which was introduced this year.

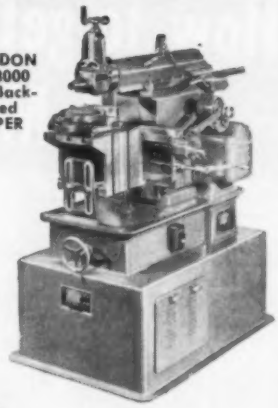
According to Ralph P. Coleman, Jr., director of training courses, "The fundamental purpose of the quality control course is to stimulate awareness and appreciation of the benefits of modern quality control procedures by a study of techniques already used in the field, and the primary goal of the spring design and specifications course is to promote better design and use by a careful analysis of the engineering and manufacturing principles involved."

The days selected for the courses are Tuesdays and Wednesdays, each two-day course involving six lectures, two laboratory periods and demonstrations, one tour and one forum.

Bulletin in regard to the courses, and information in regard to enrollment in either course may be had by sending inquiries to the Director, Training Courses, Hunter Spring Co., 1 Spring Ave., Lansdale, Pa. Prerequisites for the spring design course are experience in handling simple mathematical formulae and some knowledge of strength of materials; for the quality control course, general knowledge of inspection procedure. The only cost to participants will be those involved in traveling and for hotel expense in Lansdale.

(*Please turn to page* 306)


# SHELDON



SHELDON
No. 8000
12" Back-Geared
SHAPER

**BIG**
**Shaper Performance**
***Small Shaper Price***

The SHELDON 12" Back-Geared Shaper is neither too big, nor too small. It is just right for most shaper work in most tool rooms and shops.

In weight, design features, capacity and performance, it is a "big shaper". In price, operating cost and floor space, it resembles a "small shaper". It is the logical 1st shaper for the small shop and installations in large plants.

Write for Shaper Circular that shows, describes, and gives specifications of this shaper and its available accessories.

SHELDON MACHINE CO. Inc.
Manufacturers of Sheldon Precision Lathes • Milling Machines • Shapers
4220 N. KNOX AVENUE • CHICAGO 41, ILLINOIS, U.S.A.

**UNEQUALLED**

**... FOR MAKING LASTING SPLICES**




**...users who KNOW buy only the BEST**

*Ask for them by name...*

**OKONITE and MANSON tapes**



# BETHLEHEM

## a first-class source of DROP FORGINGS

We want your drop forgings business. What do we have to offer? The best of materials, equipment, workmanship, and service.

Drop forgings are not a new product at Bethlehem. We have had many years of experience producing forgings for the automotive, electrical, and aviation industries; for oil-field equipment; for tractors, conveyors, valves, pneumatic tools, compressors, flexible couplings, and many other purposes. These forgings, ranging in weight from 1½ to 200 lb, are made from steel of our own manufacture—available in both carbon and alloy grades.

Bethlehem closed-die forging equipment includes steam and board drop hammers, 1500 to 8000 lb; mechanical forging presses to 2000 tons; upsetters 9 in. and smaller. Heat-treating is done in the most modern types of furnaces, and every step is subject to strict metallurgical controls.

Tell us the kind of design you have in mind. We do a good job and would welcome the opportunity to show you.

BETHLEHEM STEEL

**BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.**

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
*Export Distributor:* Bethlehem Steel Export Corporation

# PERKINS Precision Gears in Production Quantities



## AT COMPETITIVE PRICES

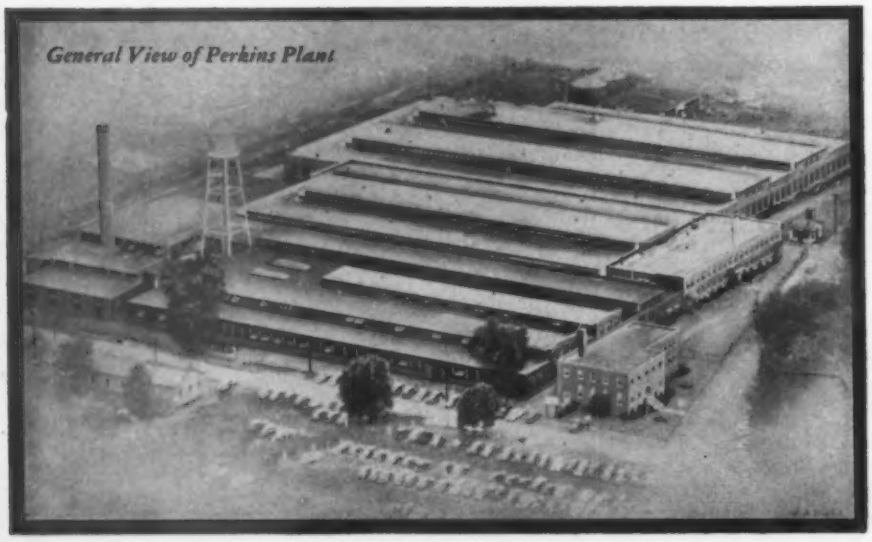
Whatever your custom gear requirements may be, here in our modern plant we have all conceivable facilities for providing practically every type of gear from any material in any size and in any quantity to your specifications at competitive prices.

Experienced engineers with a nation-wide reputation for ability in gear design and transmission problems are at the disposal of Perkins customers.

**FOR SUGGESTIONS, IDEAS & COST ESTIMATES, WRITE OR PHONE US TODAY**

**Springfield 7-4751**

**PERKINS MACHINE & GEAR COMPANY**
**West Springfield, Massachusetts**


*General View of Perkins Plant*


### RECORD RAW MATERIALS USED IN HIGH 1948 STEEL OUTPUT

The steel industry consumed record amounts of fuel oil, electric power, coal and coke during 1948, according to the American Iron and Steel Institute. Use of natural gas and tar and pitch also exceeded that of 1947.

The 97,659,000 tons of coal consumed during 1948 were 3,386,000 tons more than was used in the previous year. The total tonnage is sufficient to supply more than 15 million dwelling units in the United States with average yearly requirements for bituminous coal.

More than 23 billion kilowatt hours of electric power were consumed last year by iron and steel plants, 10.3 per cent more than in the previous record year of 1947. That amount was more than all the hydroelectric energy produced in the United States 25 years ago. Steel companies themselves generated 42.1 per cent of the total used.

The use of fuel oil increased more than 37 million gallons over the 1947 record to nearly 2.2 billion gallons. Next to coal, oil is the largest supplier of heat energy to the iron and steel industry.

During the year, 274.5 billion cubic feet of natural gas were consumed or 7.4 per cent more than in 1947. Consumption of tar and pitch, at 296,325,000 gallons, was 11.3 per cent greater than in 1947.

### GENERAL SERVICE COPPER TUBE COMMERCIAL STANDARD

Recommended Commercial Standard, TS 4874, Automotive and General Service Copper Tube, has been distributed to manufacturers and users by the Commodity Standards Division, National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. The proposed standard has been revised in line with suggestions received, and is now being recirculated for written acceptance. The recommended standard covers minimum requirements for eight standard sizes of seamless annealed copper tube manufactured for automotive and general service purposes.

### BOOKLET ON CONTRIBUTIONS OF CHEMISTRY TO INDUSTRY

The contributions of chemistry to the production, processing, packaging and merchandising of food are sketched in an interesting booklet now available from Monsanto Chemical Company, St. Louis, Mo.

Of particular interest to manufacturers, wholesalers and retailers, the booklet points out the function of scores of chemicals from 2,4,-D weed control in the field to plastics packaging on the shelves. Each section includes a list of more detailed literature on the subject.

A helpful tabulation lists all of the products by use, and refers to the proper division of the company for further information or research assistance.

(*Please turn to page* 308)




# Whatever Your Packaging Problem May Be— Gaylord Should Be Consulted

Gaylord's Engineering and Research men have come up with solutions to packaging problems that few people realized could be accomplished with corrugated boxes.

Ingenious designs affording ample protection have not only solved many manufacturers' packaging problems but have saved them money, too!

So, regardless of the nature of your product, call a Gaylord Sales Office. The Gaylord representative will make available to you the services of Gaylord's Engineering and Research.

**GAYLORD CONTAINER CORPORATION** General Offices: **ST. LOUIS**

CORRUGATED AND SOLID FIBRE BOXES●
FOLDING CARTONS●
KRAFT GROCERY BAGS AND SACKS●
KRAFT PAPER AND SPECIALTIES●

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City
Seattle • Indianapolis • Houston • Los Angeles • Oakland • Minneapolis
Detroit • Jacksonville • Columbus • Fort Worth • Tampa • Cincinnati
Dallas • Des Moines • Oaklahoma City • Greenville • Portland • St. Louis
San Antonio • Memphis • Kansas City • Bogalusa • Milwaukee
Chattanooga • Weslaco • New Haven • Appleton • Hickory • Greensboro
Sumter • Jackson • Miami • Omaha • Mobile • Philadelphia


*Want Additional Product Information? See Page 19.*

more than
80
Oakite
Materials
to solve
your cleaning
problems

## A Good Place to Look...

. . . for ways to lower per-unit manufacturing costs is in the production-cleaning end of your business. Close inspection here often reveals many opportunities to bring about substantial savings on such jobs, for example, as cleaning metals before painting, plating or galvanizing. And from a maintenance standpoint, cleaning can also play an important role in keeping production up by maintaining machinery at peak operating efficiency.

The point is, no matter what your cleaning needs might be, Oakite has the materials, methods and experience to help you find ways to cut production-maintenance costs. Consult your nearby Oakite Technical Service Representative, or send direct to Oakite Products, Inc., 54 Thames St., New York 6, N. Y. for instructive literature. *No obligation either way.*

*Technical Service Representatives Located in Principal Cities of United States and Canada*

OAKITE 1909 1949 40th ANNIVERSARY YEAR

OAKITE
REG. U. S. PAT. OFF.
SPECIALIZED INDUSTRIAL CLEANING
MATERIALS • METHODS • SERVICE

## DON'T INQUIRE ABOUT OUR PRODUCT, *UNLESS*..

● ● ● you want to save some real money in your shipping department — up to 50%!

● ● ● you want a neater, more secure closure on your corrugated or fibre cartons.

● ● ● you want to just about eliminate damage claims on you shipments.

● ● ● you want to give one of our distributors thirty minutes of your time to show you how International Retractable Anvil Staple Machines close filled cartons from the outside, tops and bottoms simultaneously if desired — nnd in so doing accomplish all the points mentioned above! (A motion picture film showing our machines in actual operation in several customers' shipping rooms can be shown right in your own office.)

*If interested, by all means write, phone, or wire —*

INTERNATIONAL STAPLE AND MACHINE COMPANY
HAVERTOWN10, PENNA.
EST. 1938 — DISTRIBUTORS IN PRINCIPAL CITIES

## AUTO PLANTS RECEIVED RECORD STEEL SUPPLY DURING FIRST SIX MONTHS OF 1949

Shipments of steel products to automotive manufacturers in the first six months of 1949 were larger than in any previous half-year, according to the American Iron and Steel Institute.

The total of nearly 5,900,000 tons to the automotive industry in the first half of 1949 was nearly one million tons or 20 per cent greater than in the first half of 1948 and 600,000 tons over the second half of 1948. The half-year shipments were equal to more than 17 per cent of total steel shipments, compared with 15.2 per cent in the first half of last year.

Total shipments of steel in the six months were over 33,600,000 tons, an increase of over 1.3 million tons from the first half of 1948 but slightly less than in the second half of 1948.

The rate of shipments to the automotive industry was well sustained throughout the six months, while shipments to numerous other industries began to sag before midyear.

Among other major consumers smaller increases were registered in the half-year shipments as compared with a year ago, by two industries. Construction received 4.1 million tons, a gain of over half a million tons or 17 per cent, while machinery manufacturers received almost 1.7 million tons, an increase of close to 200,000 tons or 12 per cent. Railroad transportation took three per cent less than in the first half of 1948, shipments in the first half of 1949 being nearly 2.5 million tons.

Manufacturers of appliances had one of the greatest reductions in shipments of steel, the six-month total of 800,000 tons being 17 per cent less than a year earlier. In June they were less than half as much as a year earlier.

* * *

## OTS SAYS AEROSOL PRODUCTS OFFER OPPORTUNITIES

Aerosol products furnish expanding market opportunities for smaller manufacturers, according to a brief review of this field prepared by the Office of Technical Services of the U. S. Department of Commerce.

Tracing the origins of aerosols from federal research for improved insecticidal sprays, OTS points out that pressurized containers have now become popular for a wide range of consumer-type products.

The summary on aerosols along with information on various other developments arising out of federal research appears in the current issue of the "Technical Reports Newsletter" issued monthly by OTS.

Copies of the October issue of the "Technical Reports Newsletter" are available on request from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. or from U. S. Department of Commerce field offices.

(*Please turn to page* 310)

# COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

*Prepared Each Month by BRIDGEPORT BRASS COMPANY "Bridgeport" Headquarters for BRASS, BRONZE and COPPER*


## Strong, Durable Wire Splice Uses Duronze III Jaws

Automatic electrical line splices, applied without solder, screw driver or wrench, reduce installation costs for outside overhead wiring jobs. Illustrated is the latest type made by Fargo Mfg. Co., Poughkeepsie, New York. Through copper-base alloys these units are corrosion resistant, and the splice is as strong as the conductor itself, and electrical conductivity is greater.

**Hard, Strong Material For Jaws**

The stripped wire is merely pushed into the ends of the splice forcing the jaws of the chucks to open as they move back on the taper. The spring between the chucks keeps the teeth of the collet type jaws in contact with the wire until they obtain a good grip. From that point on, the greater the tension, the tighter the jaws grip.

Since the chuck takes the brunt of the load, its jaws must be made from a strong, hard alloy as they are the vital elements of the connector. Duronze III, aluminum silicon bronze, answers this requirement exceptionally well. In the annealed condition it has the remarkably high tensile strength of 90,000 pounds per square inch, and a Rockwell hardness of B85.

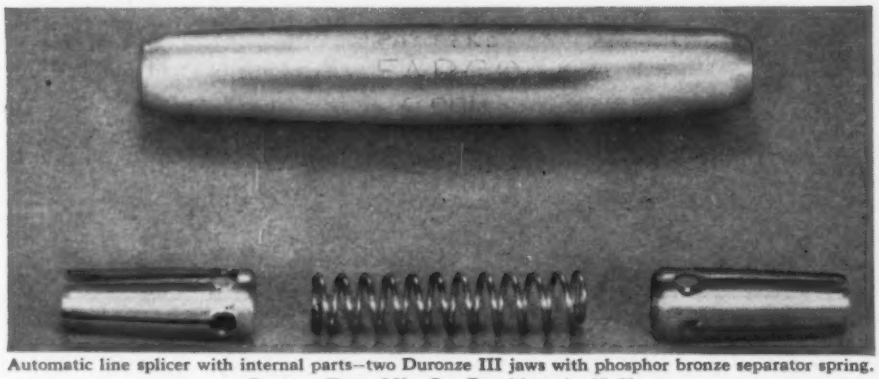
The jaws are made from round rod on a screw machine which drills, forms the taper, bores the recess and cuts off the part. The thread is cut on a tapping machine and the slots are milled in a hand miller after the four expansion holes are drilled.

On a dial feed press, a brass disc which acts as a stop to keep the wire from entering too deeply, is inserted in the counterbore and secured by turning the edges over in a die.

**Hard Drawn Copper Tubing; Phosphor Bronze Spring**

The body or outer shell, which has an inside taper to correspond to the taper on the chuck, is made of hard-drawn copper tubing for its high electrical conductivity, excellent corrosion resistance and adequate strength. Since the spring, which holds the chucks against the shell tapers until the wire is engaged, is under constant compression and may be subject to deterioration from the elements, phosphor bronze has been chosen for maximum reliability and its high corrosion resistance.

Bridgeport's long experience in making high strength, corrosion resisting copper-base alloys containing various amounts of tin, silicon, aluminum, cadmium, phosphorus, arsenic, etc., is available for products that must meet modern high engineering standards.



Automatic line splicer with internal parts—two Duronze III jaws with phosphor bronze separator spring. Courtesy Fargo Mfg. Co., Poughkeepsie, N. Y.



## Did You Know...

### That Bridgeport Brass Once Made Coal Oil Lamps?

Although Bridgeport Brass is not anxious to claim the doubtful honor of being the maker of the oil lantern that Mrs. O'Leary's cow kicked over to start the 1871 Chicago fire, there is a possibility that Bridgeport's "Farmer Model" may have been the offender.

In 1859, six years before Bridgeport Brass was founded, the famous Drake Well at Oil Creek, Pennsylvania was brought in. This inaugurated the Age of Petroleum. Although it took some little time to swing over from candles and chimneyless lard oil and whale oil lamps, America took on a brighter outlook as more and more Bridgeport's Lincoln and National kerosene lamp burners invaded the homes. This was followed by Bridgeport Leader student lamps and finally by the famed Rochester lamps with the tubular wick and petticoat lamp shade.

With the advent of electric illumination, Bridgeport gave up the manufacture of kerosene burners and lamps and discarded the tools for making them. Today, these tools would have been invaluable to produce "genuine antique reproductions" of brass student lamps and Rochester lamps which gladden the hearts of home decorators.


**BRASS · BRONZE · COPPER · DURONZE — STRIP · ROD · WIRE · TUBING**

MILLS IN
BRIDGEPORT, CONNECTICUT
INDIANAPOLIS, INDIANA

*In Canada:*
*Noranda Copper and Brass Limited, Montreal*




BRIDGEPORT BRASS COMPANY
BRIDGEPORT 2, CONNECTICUT
*Established 1865*
"Bridgeport" *District Offices and Warehouses in Principal Cities*




**CONTINENTAL makes them all and thousands more**

Of all the 400,000 varieties of fastenings that literally hold our industries together, Continental makes a large proportion marketed under the famous HOLTITE trade name. Most of them are standard — screws, nuts, and bolts for every use in every industry. Others like the well-known HOLTITE-Sems and HOLTITE-Phillips screws are patented specialties and the famous HOLTITE-Thredlock, Locktite and Tap screws were first designed and produced by Continental. Sometimes a fastening engineered by HOLTITE for one industry finds an unexpected use in another. Often a HOLTITE-*Engineered* fastening will replace several parts that a manufacturer is using. Why not discuss your fastening requirements with a Continental Sales-Engineer. He will focus on your requirements all the broad industrial-fastening experience and ingenuity of Continental. Remember Continental is constantly improving HOLTITE products, lowering their cost and broadening service.

**ENGINEERED FASTENINGS FOR PRODUCT ENGINEERS**

**A.** A typical flat head HOLTITE steel woodscrew. Continental makes a complete range of sizes with either slotted or Phillips heads.

**B.** Special Phillips "HOLTITE-Thredlock" door hinge screw eliminates lock washers and other locking devices giving improved performance when subjected to vibration.

**C.** Dial adjusting screw specially designed for bathroom scales. Screw inserted in frame is swaged against square shoulder under head. Completed part engages scale leveling mechanism to allow screw driver adjustment.

**D.** Beater drive shaft for a home electric mixer. Continental engineered this unusual part and produced it economically by cold heading process. Head end is welded to the beater unit. Knurled section provides grip for motor chuck.

*This Trademark* HOLTITE T. M. REG. U. S. PAT. OFF. *means made by —*

**CONTINENTAL SCREW COMPANY**

1904 NEW BEDFORD, MASS., U.S.A. 1949


## PERMANENT GLOSS STANDARDS NATIONAL BUREAU OF STANDARDS

Permanent gloss standards, covering the entire gloss range of non-metallic commercial materials, are now available from the National Bureau of Standards. These standards, which may be used to calibrate any 60-degree specular glossmeter in the range from matte to high gloss, are made of ceramic materials for permanence, and the surfaces have been specially chosen for similarity to commercial materials whose gloss is important. Sets of the 60-degree specular gloss standards may be ordered from the National Bureau of Standards, Washington 25, D. C., for $70.00 a set.

Measurement of gloss is becoming increasily important in many industries. For example, high-gloss paper is required for good reproduction of half-tone prints, and low-glass paper for easy reading of materials in type. Building interiors must range from semi-gloss to matte to prevent eyestrain caused by reflected images of the light sources. Gloss of a paint finish should always be adjusted to the use of the finish. Outdoor finishes, such as automotive enamels, have high gloss for permanence while matte finishes are given most war goods for low visibility. Gloss measurements are also important in defining the wear resistance of plastics and ceramics. The gloss measurement is essentially a simple one.

The gloss standards have been prepared according to ASTM Method D523 for the 60° Specular Gloss of Paint Finishes. A set consists of two white Vitrolite plaques having nominal gloss values 1 and 90, and eight glazed ceramic plaques with nominal gloss values 10, 20, 30, 40, 50, 60, 70, and 80. Each plaque, approximately 4¼ inches square, is engraved with the nominal gloss value followed by a serial number. The edges and backs of the ceramic plaques are coated with glyptal cement to prevent absorption of water.

* * *

## NEW COLOR PICTURE "LIVING WITH FORMICA"

"Living with Formica", a new color motion picture illustrating what Formica is, how it is made and where it is used, is now offered for free showing through the following Formica sales offices:

Baltimore 18, Md., 100 W. 22nd St.; Quincy 69, Mass., Granite Trust Building; Charlotte 2, N.C., 1216 Commercial Bank Building; Chicago 6, Ill., 427 W. Randolph St.; Cincinnati, 32, Ohio, 4600 Spring Grove Ave.; Cleveland 15, Ohio, 523 Caxton Building; Dallas 1, Texas, 3606 Commerce St.; Los Angeles, 15, Calif., 1151 Santee St.; New York 17, N. Y., 101 Park Ave.; St. Louis 1, Mo., 1204 Paul Brown Building; San Francisco, Calif., 907 Post St.; Ontario, Canada, Arnold Banfield Co., Oakville.

The only requirements for showing are a 16 mm. sound-on-film projector and the services of a competent operator. Running time is 25 minutes.

(*Please turn to page* 312)



## On the watch for wobble

There's a world of difference between *still*-fit and *operating*-fit in a ball bearing, especially at higher R.P.M.'s. Holding "wobble" or run-out to a minimum is the problem in order to maintain proper running clearances. Here's a true measure of Federal Ball Bearing precision, in manufacture and operation both... and another vital inspection stop along the Federal production line.

To prevent run-out, inner and outer races of *every* Federal Bearing are ground concentric with bore and O.D. Bores are cylindrical, not tapered or bellmouthed, and sides of the rings held parallel to each other and the ball track. Proper operating fit at high speeds is the result, with correct running clearances maintained between housing and shaft.

Taking the "measure" of a bearing to Federal's rigid standards involves over 100 individual production, inspection and cleaning operations—*with every fourth operator an inspector*. Out of this system of check and re-check, fifty years in the developing, Federal Bearings are equipped to deliver friction-free performance on any assignment.

Your application may benefit from a Federal Ball Bearing installation. Our representative will gladly talk it over with you. Write today for catalog "K." It describes the complete line of Federal Ball Bearings.

**THE FEDERAL BEARINGS CO., INC. · POUGHKEEPSIE, NEW YORK**

*Makers of Fine Ball Bearings*

REPRESENTATIVES LOCATED AT
**2640 Book Tower, Detroit 26, Michigan • 8 South Michigan Ave., Chicago 3, Illinois**
**Chester-Twelfth Building, Cleveland 14, Ohio**



*Quality since 1908*

# FEDERAL BALL BEARINGS

ONE OF AMERICA'S LEADING BALL BEARING MANUFACTURERS



***Want Additional Product Information? See Page 19.***

• GIFTS
• PREMIUMS
• AWARDS

BUY DIRECT FROM THIS NEW 1950 WHOLESALE CATALOG

WRITE FOR CATALOG




OVER 180 PAGES OF NATIONALLY KNOWN

- DIAMONDS
- WATCHES
- JEWELRY
- SILVERWARE
- ELECTRICAL APPLIANCES
- TROPHIES
- PEN SETS
- LEATHER GOODS
- MANY OTHER GIFT LINES

WALDRON & CO.
INCORPORATED
1211 CHESTNUT STREET
PHILADELPHIA 7, PENNA.


## LAMINATED PLASTICS AND INSULATING MATERIALS DIVISION FOR GE

A new operating division to engineer, manufacture, and sell laminated plastics and insulating materials has been established as the third operating unit of the Chemical Department of the General Electric Company. It will be known as the Laminated and Insulating Products Division. The new division, headquarters of which will be in Coshocton, Ohio, will have responsibility for laminated and fabricated plastics produced manufactured in Coshocton and for insulating materials produced at Schenectady. It will be managed by Harry K. Collins, formerly manager of the Plastics Division. E. G. Gray is sales manager.

## NEW METHOD OF PACKAGING CHAIN



A new method of packaging chain was recently introduced by the Campbell Chain Co., York, Pa. The new package consists of a telescopic-lid fibre-board cylindrical container which holds approximately 100 lbs. of chain. The exact length and size of the chain is clearly marked on 2-color labels on the top and side of the container. The new containers are said to offer definite advantages over wooden kegs formerly used as there is no wood to splinter and there are no nails to catch clothing or cause injury. They withstand rough handling and are practical for the purchasing and storage of chain.

## NEW UNIT-COMBINATION ARRESTER AND CUTOUT FOR RURAL CIRCUITS

A new unit-combination arrester and cutout, representing a 20% saving over single item purchases of the components, is announced by the Transformer and Allied Products Divisions, General Electric Company, Apparatus Department, Schenectady, N. Y. The new unit combines the basic design features of the 9 kv hi-stroke arrester and the 7.8 kv, 50-ampere flip-open cutout and provides low cost protection of conventional distribution transformers on rural lines rated 7200/12470 and 7620/13200-volts grounded Y. It is available with either the EEI-NEMA standard mounting bracket for crossarm or direct-to-pole mounting, or an optional bracket for mounting to conventional distribution transformers.


It's Quicker




That's Why It's Preferred

Every day more and more industrial buyers tell us they have switched to the CONOVER-MAST PURCHASING DIRECTORY for all their industrial buying information. And there are plenty of reasons why they have—it is easier to handle, easier to read, easier to find supply sources—and above all, it saves the user's time. Its convenient size pleases everyone. By adopting a more modern make-up, and by eliminating all duplicate and non-industrial classifications, literally hundreds of pages have been saved—all resulting in added benefits to the industrial buyer.

CONOVER-MAST PURCHASING DIRECTORY is divided into five sections—the Classified section, Trade Name section, Address section, Chemical section and a Mechanical Data section.

If you are not using CONOVER-MAST PURCHASING DIRECTORY just try it for two weeks. Then, we are confident, it will become your "buying bible" as it now has for thousands of others.

If your office does not have a copy of the CONOVER-MAST PURCHASING DIRECTORY fill out and return the coupon below.

Conover-Mast
PURCHASING
DIRECTORY
(Formerly Plant Purchasing Directory)

Conover-Mast Purchasing Directory
737 N. Michigan Ave.
Chicago 11, Ill.

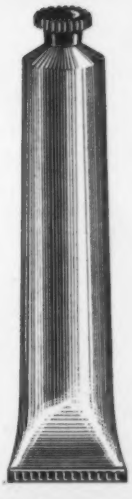
Gentlemen: Provided our Company receives a copy of the Conover-Mast Purchasing Directory, we will definitely use it in our industrial buying. That, we understand, is our only obligation.

Name _____ Title _____
Company _____
Street _____
City _____ Zone _____ State _____

# Competition Demands . .



# . . . The Winning Punch



The *long-term* economies you are able to make in producing and packaging are the plus values that give your product the stamina to slug it out and win in the market place.

Hundreds of satisfied customers who for decades have consistently bought Sheffield Process Tubes know the long-term economy of these top-quality containers. Prove for yourself how *you too* can save —whether your requirements are for tin, tin-coated, lead or aluminum tubes.

Next time you order, specify Sheffield. It pays off—in cutting returned goods losses (a timely economy now that freight rates are up)—in extra toughness—and by insuring product prestige without which all other economies are pointless.

*Get complete facts and specifications in our new illustrated catalog. Write today.*

***THE SHEFFIELD TUBE CORPORATION**
HOME OFFICES · NEW LONDON, CONN.
W. K. SHEFFIELD, V. P. CHICAGO 16, ILLINOIS T. C. SHEFFIELD
NEW YORK 18, N. Y., 500 FIFTH AVENUE 3132 CANAL STREET LOS ANGELES 38, CAL., 7024 MELROSE AVE.
EXPORT: 500 FIFTH AVE., N. Y. CABLE "DENTIFRICE", NEW YORK

New England SHEFFIELD PROCESS TUBES

*Formerly Named New England Collapsible Tube Co.: Not to be construed as a change in ownership, management, personnel or policies.



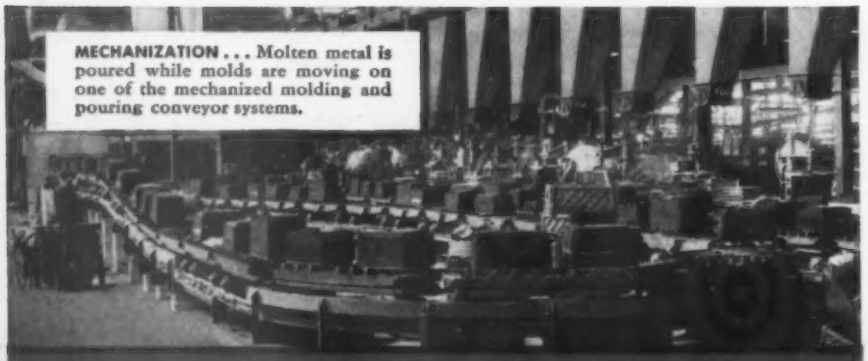

**The book illustrated above will show you why the highly mechanized facilities of Forest City Foundries PLUS skilled manpower may be just the answer you need, to bring down your production costs.**

**With our extensive new conveyor systems and other new machinery, and our highly skilled workers . . . with *two* complete foundries . . . it is quite likely that Forest City Quality Castings and Better Service can produce substantial savings for you.**

**If you have not received a copy of the booklet, write for it today. Or, if you wish, our representative will call to discuss your gray iron castings requirements and our ability to supply them —economically!**

***Forest City is geared to the making of a wide range of gray iron castings — S.A.E. or A.S.T.M. Specifications — Plain or Alloyed.***

**"MAKE IT BETTER WITH GRAY IRON"**




The FOREST CITY FOUNDRIES Company
2500 West 27th Street Cleveland 13, Ohio
TOwer 1-5040


## Get Acquainted

(*Continued from page* 89)

we feel that a caller should leave our office feeling that he has been given a friendly ear, thus generating an over-all cordial attitude toward our company as a whole.

That's what I mean by the personal element in business relationship, particularly as it applies to the purchasing department.

To go back to the Association, I have always felt that N.A.P.A. is a short cut for fostering the kind of personal relationships that lead to favorable business contacts. Association membership means a great many other concrete things, such as frequent data sheets, information about the general field of purchasing and forthcoming meetings of PA groups, as well as occasions for mutual exchange of ideas. Additionally, there is the personal pleasure one derives from getting together with others having mutual business and social interests.

But these advantages are secondary to the value of personal contacts and human relationships which always form a satisfying part of business life.

I would like to pass along a simple little creed for purchasing agents—a creed that may be followed equally well in Association as in business relations:

1. Be friendly.
2. Display an eagerness to serve.
3. Keep an open mind.
4. Be interested in others.

Remember, it's the personal contact that counts.

## Lost in the Crowd

(*Continued from page* 110)

Some companies put individual name plates on each office worker's desk, no matter how humble the position. This gives a form of individual notice, and helps new employees and visitors find their way around. Some firms extend this name plating to bench workers; the worker's name is stenciled at his work place and on his locker. In some cases the employee's name is painted on the machine he operates, with a distinguishing color to show his years of service.

One firm has a "Who's Who" display on the department bulletin boards. A snap-shot of a different employee is posted each day, with a friendly biographical sketch underneath. A new employee's "Who's Who" is posted for his first three days. In one department when the foreman's sketch was posted, some-

one scribbled above it: "Wanted, Dead or Alive!"

One mechanical attempt which revealed failure of man-to-man relations was an enormous automobile company where supervisors were provided semi-uniform caps, with their names printed above the visors. Many workers did not know who their foreman was until he had this identifying cap. (Sometimes the boss is the forgotten man.) The result of the identifying hats was a momentary spurt of work when the grey cap approached, and a slackening off as soon as it disappeared. Production slumped, though the foremen reported that they saw no stalling since they were given the hats. The hats merely made the bosses more conspicuous and more disliked; the nickname for all foremen became "The Hat."

Such mechanical methods at least reflect industry's worry about the problem of overlooked people, even though the solutions are silly. Nothing takes the place of personal regard. The boss must be all business, but getting acquainted with every last employee, and keeping acquainted, is an important part of his business. Failure to do this keeps human relations on the rough road.

1 1 1

## Stores and Inventory Control

(*Continued from page* 141)

ished stores, the inventory of the company's own manufactured products as contrasted with purchased items. As might have been expected, the purchasing department has little concern or responsibility in this category, and the data received are inconclusive. Only 63 replies of the 484 checked this question, and only two of these indicated any purchasing responsibility. In both cases, the purchasing department is shown as in charge of the general stores operation, and presumably finished stores are carried in the general warehouse.

The conclusions that can be clearly drawn from this study are:

(1) that the broad function of materials control, including both the policy function of inventory control and the administrative control of physical stores, are primarily related to the purchasing function, along with actual procurement of purchased items;

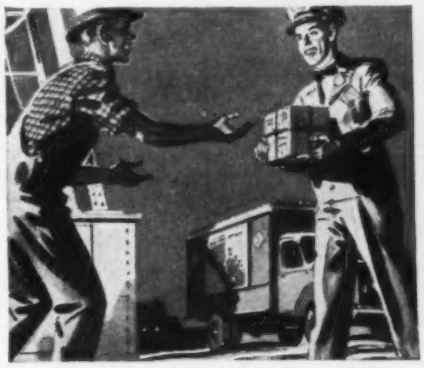
(2) that the majority of companies place stores operations directly within the jurisdiction of the purchasing department; and

(3) that the trend is strongly in this direction.


**$3.19 Air Express cost helped this wildcatter strike it rich!**



**When a pump valve** goes while drilling for oil, it's costly. Idle men and equipment make profits evaporate. It happened to a wildcatter at 4 P.M. Phoned 800 miles away for parts—delivered 11 P.M. that night by Air Express. 12 lbs. cost only $3.19. (*Regular* use of Air Express keeps *any* business moving.)



**$3.19** was *complete* cost. Air Express charges include speedy pick-up and delivery service. Receipt for shipment, too. Makes the *world's fastest* shipping service exceptionally convenient.



**Air Express** goes on all Scheduled Airline flights. Frequent schedules—coast-to-coast overnight deliveries. Direct by air to 1300 cities, fastest air-rail to 22,000 off-airline offices.

**Facts on low Air Express rates**

Special dies (28 lbs.) go 500 miles for $4.30.
6-lb. carton of vacuum tubes goes 900 miles for $2.10.
(*Same day* delivery if you ship early.)

**Only Air Express gives you all these advantages:** Special pick-up and delivery at no extra cost. You get a receipt for every shipment and delivery is proved by signature of consignee. One-carrier responsibility. Assured protection, too—valuation coverage up to $50 without extra charge. Practically no limitation on size or weight. For fast shipping action, phone Air Express Division, Railway Express Agency. And specify "Air Express delivery" on orders.

SPECIFY AIR EXPRESS
GETS THERE FIRST

Rates include pick-up and delivery door to door in all principal towns and cities



AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE
SCHEDULED AIRLINES OF THE U. S.

# Story of the two "missing days"



**Back in 1910,** when a man left his home on Monday morning, he had a 58-hour work week before him.

But over the years—as workers, business and manufacturing methods all got more efficient—it took less and less working time to produce goods of all kinds.

The result is that today the average work week has been cut to 40 hours. 18 hours—more than two whole working days—are missing from a man's work week. They've been transferred to the man himself—to use for leisure time!

But that's not the whole story. Back in 1910, the average household earned about $2400 for its year's work. Today, for a lot less work, it earns nearly *twice* that! And in dollars of the same purchasing power, too.

**That's the American economic system at work.**

This system has some faults—such as ups and downs in prices and jobs. And everybody in this country, except a small group of eccentrics and communists, is working to correct them.

**But just remember this:** If you want to earn still more money—if you want to work still shorter hours—the only way to do it is to make the American system work even *better*. And that means that every man, every business, every machine has got to produce more and more for every hour they work—just as they've *been* doing since 1910. And if they do, the gains can be shared by everyone.

All of us in this country *want* the system to work better. And if all of us work together—you can be dead sure it *will*.

**The Better We Produce—The Better We Live**

---

**Approved for the PUBLIC POLICY COMMITTEE of The Advertising Council by:**

**EVANS CLARK,** Executive Director The Twentieth Century Fund
**BORIS SHISHKIN,** Economist, American Federation of Labor
**PAUL G. HOFFMAN,** Former President Studebaker Corporation

---

Like many American firms, we believe that business has a responsibility to contribute to the public welfare.
This advertisement is therefore published as a public service by:

**PURCHASING**

**FREE . . . *send for this interesting booklet today!***




**Approved by representatives of Management, Labor and the Public.**

In words and pictures, it tells you
—How our U. S. Economic System started
—Why Americans enjoy the world's highest standard of living
—Why we take progress for granted
—How mass production began
—How we have been able to raise wages and shorten working hours
—Why the mainspring of our system is productivity
—How a still better living can be had for all

**MAIL THE COUPON** to Public Policy Committee, The Advertising Council, Inc., 25 West 45th Street, New York 19, New York.

NAME_____

ADDRESS_____

_____

OCCUPATION_____

## BUREAU OF STANDARDS ISSUES SUMMARY OF SCIENTIFIC ACTIVITIES

An interesting, readable summary of investigations in the physical sciences carried on at the National Bureau of Standards during the fiscal year 1948 is contained in a 272-page illustrated booklet just published by the Bureau and now available from the U. S. Government Printing Office.

Scientific activities at the Bureau during the year were conducted by 13 divisions concerned with electronics, applied mathematics, atomic and molecular physics, radio propagation, electricity and optics, metrology, heat and power, chemistry, mechanics, organic and fibrous materials, metallurgy, mineral products, and building technology. A fourteenth division dealt with commodity standards. Of the numerous and varied projects carried out by approximately 100 sections within these divisions, those of greatest general interest and widest application have been selected as typical for description.

Included are the development of a magnetic fluid clutch having extensive applications and many unique features, research on resin-bonded papers, development of a proposed new standard of length based on the wave length of a mercury isotope, measurement of the magnetic moment of the proton, use of a new electron-optical technique for exploring electric or magnetic fields in space, investigations of automotive antifreezes, and further study of the properties of matter at very low temperatures. Space is given to extensive programs on nuclear radiations; high polymers; and aeronautics, including research on air turbulence at supersonic speeds, development of high-octane aviation gasoline, and the design of combustion chambers for gas turbines and jet engines. Research on housing problems also receives emphasis, particularly the problem of applying engineering principles to structural design.

Annual Report of the National Bureau of Standards for 1948, 272 pages, 39 halftone illustrations, 25 cents a copy, available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The text of this report is also included in the 36 Annual Report of the Secretary of Commerce. Remittances from foreign countries must be in United States exchange and must include an additional sum of one-third the publication price to cover mailing costs.

1 1 1

## NEW 18-8 STAINLESS STEEL ANNOUNCED BY WALLINGFORD

A new 18-8 bright annealed stainless strip steel, claimed to be wider than anything heretofore produced by any manufacturer, has been announced by The Wallingford Steel Co., Wallingford, Conn., a subsidiary of the Allegheny Ludlum Steel Corporation. The new strip is rolled up to 15" in width, in thickness to .070 and retains all the advantages offered by this stainless. Further information and samples are available upon request.

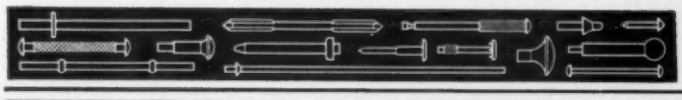

**The trained hand of Hassall offers you:**




**HASSALL** cold-heading may solve your immediate special part problem... Special nails, rivets and threaded parts made in diameters from 1/32" to 3/8"—lengths up to 7"... Rivets 3/32" diameter and smaller a specialty... also small threaded blanks... Variety of metals, finishes and secondary operations... Economy, quality and quick delivery in large or small quantities... Your inquiries answered promptly... ASK FOR FREE CATALOG...3-color DECIMAL EQUIVALENTS WALL CHART free on request.

**JOHN HASSALL, INC.** 404 OAKLAND STREET BROOKLYN, N. Y.

*Manufacturers of Cold-Headed Specialties—Established 1850*



SPECIAL NAILS RIVETS SCREWS — Hassall — ESTABLISHED 1850

**FAMOUS EXAMPLES OF ARMORED CONSTRUCTION**

**1. U. S. ARMY "GENERAL PATTON" TANK**



**2. AMERICAN HEAVY DUTY UTILITY SNATCH BLOCK**




9302

Dropped, slammed and battered on the job, blocks and sheaves have to be tough! *Armored Construction* makes AMERICAN Heavy Duty Utility Snatch Blocks serve better, last longer. Rigged quickly, too . . . just lift the hook and lay in the rope. In three sheave sizes, ten-ton capacity, handling up to 7/8" wire rope. Sold by distributors everywhere. Made by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minn.

**ALSO MAKERS OF THE AMERICAN HANDIWINCH AND GENUINE CROSBY CLIPS**

**ASK FOR AMERICAN BLOCKS AND SHEAVES**




Automatic serve-up packages

# New! Industrial Tissues

## For Wiping and Polishing



Wiping precision instruments



Polishing machined parts

Let clean, *disposable* KIMWIPES* industrial wiping tissues standardize — and economize — your cleaning operation. Soft, yet strong, they're ideal for cleaning precision tools and instruments. Recommended for use on finely finished surfaces. And highly absorbent KIMWIPES remove dust, dirt, grease and oil—quickly, safely.

For further information and the name of the KIMWIPES distributor nearest you, write us on your business letterhead. Address Kimberly-Clark Corporation, Creped Wadding Division, Neenah, Wisconsin, U. S. A.

**Kimwipes*** 

**INDUSTRIAL WIPING TISSUES**

*Trademark Reg. U. S. & Can. Pat. Off.

# For ECONOMICAL FASTENING CALL Chicago Rivet!

Riveting with Chicago Automatic Rivet-Setters is a fast, inexpensive way to fasten metal to metal, wood to wood, leather to leather, fabric to fabric, plastic to plastic, or any combination of these. Chicago Rivet engineers have the experience of 26 years to help you with your hard fastening problems.

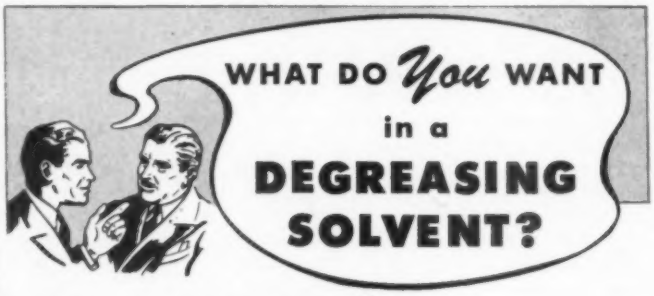
**Free FASTENING CLINIC**

Send us a drawing or unfastened sample or sub-assembly of your product. We will gladly analyze your fastening needs, recommend the type of rivet and Chicago Automatic Rivet-Setter to do the job best, and submit estimated production rates. No obligation.



*Model 121*
*Chicago Automatic Rivet-Setter*

**CHICAGO RIVET & MACHINE CO.**
**9607 W. Jackson Blvd., Bellwood, Ill.** *(Chicago Suburb)*
**Automatic Rivet-Setters • Tubular and Split Rivets in all Rivet Metals** C-1




**UTMOST STABILITY?**

Then you want PERM-A-CLOR—the *most highly stabilized* degreasing solvent. As to Control—simple titration *measures* service condition.

**TOP ECONOMY?**

For over-all degreasing economy and complete assurance even under most adverse conditions, *no other solvent equals PERM-A-CLOR.* For average use, TRIAD, the competitively priced stabilized trichlorethylene solvent, with Detrex service, will save you money.

**SAFETY?**

PERM-A-CLOR and TRIAD are *non-flammable, non-explosive* and truly safe for your equipment, products and personnel.

*Write for complete information on these outstanding degreasing solvents and the advantages of Detrex free customer service.*

**DETREX** Corporation
BOX 501, DETROIT 32, MICH.



# HOLDS ITS SHAPE

## . . . like a camera-conscious model



BEFORE the lens or behind the back-yard fence, the WITT Can is a picture of ruggedness. Its shiny surface reflects years of service, undaunted by weather, the attack of food acids or the abuse of rough handling.

Heavy gauge steel is formed into extra deep, *rolling* corrugations . . . the strongest known. Lock seams are electrically welded . . . shock-absorbing structural steel bands protect the vital bottom seam and hold the top in shape. Strong handles are securely fastened to the Can and lid. Then, the final but all-important step—the complete Can is hand-dipped, hot-galvanized . . . filling every crack and crevice . . . stopping rust before it can start.

Even the most cost-conscious buyer will recognize the advantage of buying WITT Can quality. Behind this quality stands the famous guarantee . . . "outlasts ordinary Cans 3 to 5 times."

*Witt Cans*

**THE WITT CORNICE COMPANY**
**CINCINNATI 14, OHIO**
*"Originators of the Corrugated Can"*

---

ANNOUNCING

**An Expanded, Helpful Service to Purchasing Agents and Buyers and Other Department Heads.**

**The Reader Service Department of Purchasing Magazine**

will procure for you printed matter on any of the products mentioned in the "New Products and Ideas" Section, pages 150 to 192, incl., as well as the catalogs and bulletins listed in the "Ask Purch" pages 12, 14, 16 & 20.

You merely circle or check your wants on the Postage-paid Reader Service Post Cards on Pages 19 and 20.

Thus you can keep your Catalog and Information files up-to-date, with minimum effort on your part. Your Postal request will be given immediate attention.

**Check Your Wants on the Cards as you Go through the Pages — That's All.**

# DETECTO SCALES

There's a precision-accurate Detecto Scale for your specific weighing and counting need. The Detecto helps increase production, yet assures you maximum accuracy by making slightest weight discrepancies immediately visible.

**DETECTO-GRAM HIGH ACCURACY SCALE**

Another Detecto-Gram Scale for your precision weighing jobs. Use this Detecto-Gram Super Sensitive Model #74-02 where hair-line accuracy is essential, where an error in the smallest fraction of an ounce may affect your profit.

*Write for literature.*



**DETECTO · SCALES · INC.**
MAKERS OF FINE SCALES SINCE 1900
540-NP PARK AVENUE · BROOKLYN 5, NEW YORK
SCALE ENGINEERS IN ALL PRINCIPAL CITIES

# LET Mack FIGURE IT IN PLASTICS—





RCA INTERCOM
"Converts Walking Time Into Working Time."
Case molded by Mack.

Call or write for illustrated booklet A completely describing MACK facilities.

## 3 plants completely equipped to serve you!



DESIGN



MOLD MAKING



MOLDING

- WAYNE, NEW JERSEY
- ARLINGTON, VERMONT
- WATERLOO, P.Q., CANADA

Figured any way you look at it, letting MACK figure on your plastic molding jobs makes good sense. In the business since the early days of the industry, MACK has the experience and the facilities to do the job right. Choice of materials, design and mold making, finishing and delivery are *all* carefully followed through to insure the *best* results for you. That's why many MACK customers have been with us for a quarter of a century. Inquiries are invited — address Mack Molding Co., Inc., Main Street, Wayne, N. J.

THREE PLANTS
WAYNE, NEW JERSEY
ARLINGTON, VERMONT
WATERLOO, P.Q., CANADA

Mack MOLDED EXCELLENCE



# SAVE HUNDREDS OF DOLLARS ON YOUR NEXT SPRING ORDER?



YES, you may be able to save hundreds—even thousands—of dollars by using Lewis "job-designed" springs that are just as efficient, but far less costly than the springs you now may be using through habit.

The "angle" is in the design, manufacture and application of the simplest spring to solve the particular problem. "Fancy" springs may be beautiful but they're expensive, and *don't add to product efficiency*.

Lewis Spring Engineers not only take pride, but feel it's business-building policy, to help customers save by recommending the most *practical* springs at the most *practical* price. Their recommendations are based on many years of experience in the application of most all types of springs for thousands of products.

Call in a Lewis man early—while your new product plans are in the blueprint stage—and let him make his suggestions without obligation.

**LEWIS SPRING & MFG. CO.**
2648 North Avenue, Chicago 47, Illinois

Lewis PRECISION SPRINGS

THE FINEST LIGHT SPRINGS AND WIREFORMS OF EVERY TYPE AND MATERIAL

# *Serving* THE HEART OF *Industrial America*

*Allied* delivers fuel oil of any grade—when wanted—and in any quantity to meet specific requirements.

*Allied's* dependable fuel oil service is made possible by an integrated network of storage terminals, lake tankers, river barges, tank-cars and transport trucks.

*Allied Oil's* co-ordinated facilities deliver complete fuel oil service to hundreds of industrial plants, institutions and communities in the Middle West.

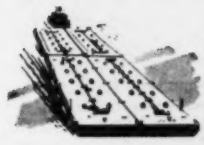
Serving the heart of industrial America has been the business of *Allied Oil* for over 24 years.

ALLIED OIL COMPANY INC.
1700 STANDARD BUILDING • CLEVELAND 13, OHIO

TRANSPORTATION BY ALLIED







# HODELL BULLDOG COIL

## *The Chain of a Thousand Uses*

Because it is strong, light, flexible and low in cost, Hodell Bulldog Coil Chain has a wide variety of uses in industry.

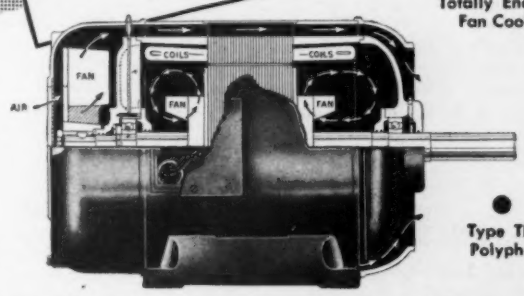
Size for size, Bulldog Coil Chain has an amazingly low weight in proportion to its load-carrying ability and resistance to wear.

Available in 15 sizes to meet every need. Write for full information.

*Established 1886*

HODELL CHAIN COMPANY
3924 COOPER • CLEVELAND 3, O.
DIV. of THE NATIONAL SCREW & MFG. CO.

THE LATEST DEVELOPMENT in AIR COOLED Ball Bearing MOTORS




Here is the newest and most successful development in air cooled motors. Totally enclosed, constant speed, continuous duty; it is designed for cooler and more economical operation under the hardships of extreme heat and dust. Fully ball bearing and quiet running, too. You will want to know more about this *new* VALLEY Motor.

WRITE FOR DESCRIPTIVE LITERATURE

VALLEY
ELECTRIC CORPORATION
4221 Forest Park Blvd. • St. Louis 8, Mo.

# LETTERS . . .

## ORDER HANDLING FREQUENTLY FAULTY

I read your article in September PURCHASING, "Cooperation Works Both Ways," and in addition have shown it to manufacturing and jobbers representatives who have called. Not only do I, but they too feel your article is splendid and to the point. Several have expressed the desire of obtaining a copy for their home offices.

It may be a good idea if proper machinery can be set in motion where the presidents and general managers of all corporations may get a personal copy of this article with a leading question directly to them as to whether or not it applies to the lack of administration in their organization. In other words, a survey could be made with their help with a final question as to what action they will take to insure proper relationship between themselves, their representatives and their customers.

This may sound like a monumental task, Mr. Heinritz, however, it should not be such to our Association. It is up to us to call the error of their way to persons who should, but do not know, what a sad state of affairs exists in their administrative procedures unless some call it to their attention in such a manner which demands action on their part to the final accomplishment of the mission we so greatly desire.

Many manufacturers spend thousands yearly for the training of their salesmen. They then pinch pennies on administrative procedure which prevents these salesmen from getting repeat orders. They could split the training expense and spend the other half on administrative training and realize a material increase by such action.

I do not intend to create a wrong impression by presuming to believe that we in the procurement profession are without sin and omission. It behooves us as a group to keep ahead of the hounds. By doing so we can accomplish a world of good and build a firmer relationship by working from the top down.

I am glad you have started the ball rolling and feel that through your knowledge and experience a world of good can be accomplished by future articles of yours.

Robert C. Alley
Gulf Power Co.
Pensacola, Fla.

## WHY A FINNISH NAPA

During the last two years I have had the opportunity of reading your publication PURCHASING, and have been especially interested in the articles regarding the organization and work of your Association.

Since my years of study, I have been employed for five years as a buyer in the Purchasing Department of a large company here in Finland, and at the present time I am acting as Purchasing Agent for a subsidiary of this Company.

Because I am both young and with little experience in the game, I am turning to you for help and information, in the hope that should it prove possible we could start a similar purchasing association here in Finland.

Although I appreciate that information of this kind is not included in your customer-service, I am taking the liberty of asking you the following questions:—

1. What outstanding advantages do you consider that the members of NAPA have had of this Association during the years it has been working in the U.S.A.?
2. Have countries other than England and the U.S.A. similar Associations, and is the programme uniform?
3. Are the other countries' Associations working together with NAPA?
4. Do you think that a purchasing association has a mission in even so small a country as Finland?
5. What line of action do you consider is most important for the preliminary working programme for an association of this kind.
6. How was the first management of NAPA built and organized?
7. How was the first working organized?

As soon as I have collected the necessary material I intend to establish contact with some of the Managers of the largest industries and companies in Finland, in order to interest them in the project.

If you consider that there are possibilities for starting a Purchasing Association in Finland and would be kind enough to supply the necessary information, I should be very grateful. Also in the future for any additional ideas on organization when we are planning the work.

I am looking forward to your reply with great interest.

Bo. Ekelund
Wartsila-Cellulosa A/B
Aanekoski Mills,
Aanekoski, Finland

1. It would be difficult to enumerate all of the advantages that N.A.P.A. has provided to its members. In a general way, it has made management conscious of the purchasing function and its importance, thus improving the position and the opportunity of everyone engaged in purchasing work. It has compiled a code of ethical practice, which has raised the standard of purchasing and improved relationships with management and with salesmen. It has made studies of purchasing methods and policies and commodity information that help purchasing men to be of greater service to their companies and to conduct their departments more efficiently. It has made educational facilities available for company training courses, local association programs, and in schools of business administration. Through its weekly bulletin, it advises members on economic developments, governmental regulations affecting purchasing, and similar topics of interest. Through the local groups, it has enabled purchasing men in every locality to meet and get acquainted with others in the same line of work, thus making possible a regular interchange of experience and judgment on current purchasing problems. It has provided a central, authoritative voice for expressing the purchasing viewpoint on questions of management, economic, and national policy. While it has never engaged in lobbying or other forms of group pressure, it has directed purchasing thought collectively along constructive channels, and has thereby exerted a powerful influence of ideas.

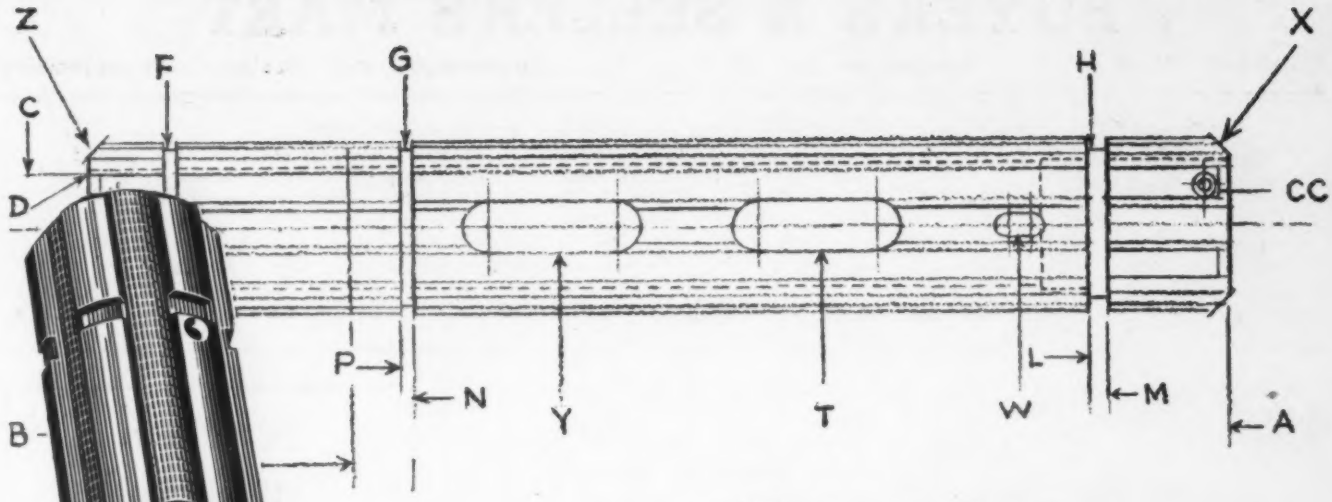
2. To our knowledge, N.A.P.A. and the British Purchasing Officers Association represent the only associations of general character and national scope. The N.A.P.A. covers Canada and Mexico as well as the U.S.A. The objectives are similar, though the programs differ somewhat because each is keyed to the industrial organization and particular national conditions in respect to governmental controls, etc. We have also in the U.S.A. several national associations of purchasing men in particular fields, such as N.I.G.P. for governmental buyers, N.E.A.B. for purchasing officers of schools and universities, Division VI of A.A.R. for railroad purchasing agents, etc.

3. There is no official connection between N.A.P.A. and B.P.O.A. or other purchasing associations. Several members of the B.P.O.A. have held membership in N.A.P.A. by joining one of the Canadian local groups of N.A.P.A. To an even greater extent, many members of the specialized associations mentioned above also hold membership in N.A.P.A.

4. There is a mission for a purchasing agents association wherever there is a group of men with this common interest and common problem of purchasing, so located that they can meet together, and seriously interested in improving themselves and the purchasing service they perform for their companies.

5.6.7. N.A.P.A. had its origin in local groups. The associations at Boston, New York, Buffalo, and Columbus were all in existence before the idea of a national organization existed. The procedure in each of these cases was similar, and the same procedure is followed as new local associations are formed today. One or two interested persons invite other purchasing agents to meet informally and discuss the advantages of having such an association in their city or locality. Generally enough interest is shown to form the nucleus of a good working group. The major industrial companies of that area are then canvassed to enlist as large and representative group as may be practicable. The objectives of the association, rules of membership and method of organization are put into the form of a constitution and by-laws, and the association is ready to go to work. N.A.P.A. considers that a minimum of 25 members should be enrolled as an effective working group, though some of the local groups were initially smaller than this. Most of the local groups meet once a month. There are annual meetings on a larger scale for the various geographical districts and for the national organization. The character of the program depends on the current problems of the purchasing agents and their degree of advancement in professional purchasing knowledge and skill. The meetings take the form of informal discussion, speakers on pertinent topics, visits to manufacturing plants to observe production methods, etc. The range of subjects can cover office procedures, purchasing policies, legal and governmental regulations, commodity information, relations with management and other departments, etc. A review of the reports in "Association News" in PURCHASING will offer many suggestions.

We believe there is a real opportunity for such an association in your country. It would certainly be worth while to call in the purchasing agents of other companies and discuss this possibility with them. Even though the numbers may be small and geographical coverage limited at the outset, the advantages are many and the benefits immediate, and further growth will follow. We shall be happy to make further suggestions as specific questions may arise.—Ed.




# the tube that helps pay for itself

IT takes 20 operations—from broaching to final milling—to make this tubular spline shaft. Cost of this machining sequence makes the finished shaft a stiff rejection risk . . . only quality seamless tubing can be used for the job. The tubing used in this particular instance, however, helps pay for itself in the bargain.

This dividend stems from a spec change, a new analysis recently adopted by the manufacturer on Frasse recommendation. Costing 10% extra, this tubing, through better machinability, *more* than earns back its slight additional cost.

Elapsed time of the cut-off operation, for instance, has been reduced from 1.03 to .948 minutes. Rough turning once took 3.0 minutes—now requires but 1.72. Broaching is now accomplished in one pass instead of the previous two. And 6.77 minutes of hobbing operation have been cut to 5.72—*with 30% longer tool life*, by the manufacturer's own estimate.

Frasse is a leading distributor of steel tubing—and provides a wide range of immediately available carbon, alloy and stainless analyses to work from. But equally available, and equally useful, are Frasse engineering facilities to help you use tubing to your best advantage. Call *Peter A. FRASSE and Co., Inc., 17 Grand St., New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange St., Buffalo 3, N. Y. (Washington 2000) • Jersey City • Syracuse • Hartford • Rochester • Baltimore.*

**FRASSE**

*your best bet* **for Steel Tubing**

**SEAMLESS AND WELDED MECHANICAL TUBING • AIRCRAFT, CONDENSER AND PRESSURE TUBES • STAINLESS TUBING, SEAMLESS AND WELDED • STAINLESS PIPE, VALVES AND FITTINGS**


*Want Additional Product Information? See Page 19.*

# BUYER'S & SELLER'S MART

**Contract Work • Equipment For Sale • Employment and Business Opportunities**

**RATES**

Undisplayed (set solid) ..... 90¢ line
Positions Wanted ..... 45¢ line

Displayed .....$8.50 inch

**REQUIREMENTS**

Undisplayed (want-ad style), minimum charge 4 lines, prepaid. Figure forty-four letter spaces (five average words) to a line. Add one line for box number address; replies forwarded without charge.

Discount of 10% for twelve consecutive displayed insertions. Forms close 15th of month preceding date of publication.

*Send orders to:* CLASSIFIED DEPARTMENT • PURCHASING • 205 E. 42nd St., New York 17, N. Y.


LET US MANUFACTURE FOR YOU

YUBA offers you complete shop facilities for contract manufacturing at Benicia, California, on San Francisco Bay. We can do all types of shop and foundry work—

- Carbon and alloy steel forgings
- Heavy machine shop
- Steel fabricating
- Heat treating
- Iron foundry
- Welding

Topflight engineering staff for design and layout. Write, wire or phone NOW for further details and estimates

YUBA DREDGES — PROVED DEPENDABILITY

YUBA MANUFACTURING CO.
Room 702 • 351 California St. • San Francisco 4, Calif.

Electric Rivet and Metal Heaters
Resistance Heating
**Cummings Rivet Heater Co.**
50 Church St. New York 7, N. Y.
Plant — Bloomsburg, Penna.

***METAL SPINNING and STAMPING***

**SPINNING**

All metals to 60" dia.,
To 16 ga. Stainless, To 12 ga. Mild Steel,
To ¼" Aluminum Plate

**STAMPINGS**

Designing & Quantity Production
**LA HAYE MANUFACTURING CO.**
2150 Geneva Ave., San Francisco 24, Calif.

**NePSco**
**NEW ENGLAND PRESSED STEEL COMPANY**
*Contract Manufacturers since 1914 of "Trouble Free"*
METAL STAMPINGS
SPECIALTIES — APPLIANCES
*For Industrial and Domestic Users*
P. O. BOX 29
NATICK, MASSACHUSETTS

**AN IMPORTANT MESSAGE**
**TO MANUFACTURERS**
**(WITH OR WITHOUT THEIR OWN FOUNDRY)**

**"CIRCULAR IRON CASTINGS"**

can, in most cases, be made by us *without patterns*, thus saving time, trouble and money.

Yes, fine quality, accurate iron castings for Pulleys, Flywheels, Gear Blanks, etc., can be made by us in most any size and quantity. (We've been doing such work for 92 years.)

Send us sketch or blueprints for prices.

T. B. WOOD'S SONS CO.
CHAMBERSBURG, PA.

**SCREW MACHINE PRODUCTS**



**1913-1949**

Each Year Adds a Little More to What We Know about Screw Machine Products.

*Check up with us*

We may be able to show you a Real Saving on Parts — Up to 2½" Dia.—In STEEL—BRASS ALUMINUM

**OLSON MANUFACTURING CO.**
100 PRESCOTT ST., WORCESTER, MASS.
Offices:
New York and Philadelphia


## *FOR SALE*

DEMPSEY STANDARD OIL FIRED FORGE Size 1'6" x 3" Slot Including Spencer Turbo Compressor. EASTERN TRACTOR, KINGSTON, N. Y.

## *POSITIONS WANTED*

AS BUYER, 12 years automotive experience motor coach industry. Last four years as buyer and expeditor of service parts. Single, age 34. Best of experience. Will locate anywhere in U. S. Box 1243, PURCHASING, 205 E. 42 St., N. Y. 17

ASSISTANT PURCHASING AGENT, Material Coordinator, or Warehouse Superintendent: 30 year old B.S. in Business Administration with 8 years experience in industrial material procurement, expediting, warehousing, coordinating and accounting, in general construction, oil refinery maintenance, and other industries desires change from present Cost Accountant position. No preference as to location, domestic or foreign. Box 1244, PURCHASING, 205 E. 42 St., N. Y. 17.

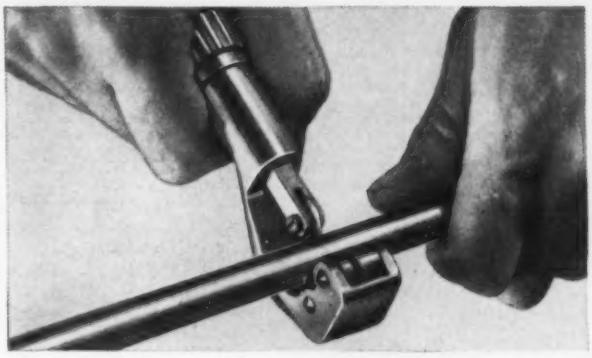
PURCHASING AGENT or ASSISTANT: Desire position with steel fabricator or allied company. Eight years steel buyer, knowledge of production and inventory controls, and accounting procedure. Locate Pittsburgh district. Box 1245, PURCHASING, 205 E. 42 St., N. Y. 17.

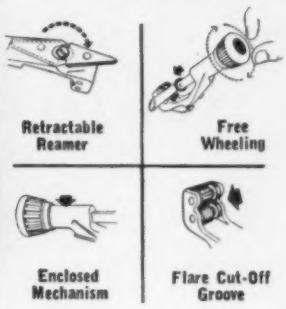
PURCHASING position desired with Oil or Supply company. Six years buying refinery, drilling, production equipment and materials. Also field and expediting experience. Age 32. College degree. Prefer Texas, Oklahoma, California. Box 1246, PURCHASING, 205 E. 42 St., N. Y. 17.

OFFICE MANAGER—Analyst. Long experience in railroad, manufacturing industry, insurance field. Heavy systems, analysis, "trouble shooting." Married. Available October. Box 1247, PURCHASING, 205 E. 42 St., N. Y. 17.

# Tube Working Topics

## BY IMPERIAL . . . For Men Who Work With or Connect Tubing






## NEW TUBE CUTTER HAS BALL BEARING ACTION

Something new has been added in tube cutters. A "free wheeling" tube cutter with ball bearing action is the latest development in this type of equipment. This new Imperial tool not only makes cutting easier, but this free wheeling feature speeds size adjustment.

This cutter makes speedy, right-angle cuts on hard or soft temper copper, brass, aluminum and thin-wall steel tubing in sizes from ⅛" to 1" O.D.

An unusual feature is the flare cut-off groove which permits removal of damaged flares from tubing with a minimum of waste.

Cutter has a retractable reamer which folds out of way when not in use. Body is aluminum alloy providing high strength with minimum weight. Overall length only 4½", making cutter extremely convenient in close quarters.

Tool is listed as Imperial No. 274-F . . . $3.30 each. Other cutters available for tubing up to 2¼" O.D.

## FEATURES SINGLE-NUT CLAMPING





Fig. 1. Tubing is inserted between segments of proper size die block. Then cam action clamp is swung into position and thumb screw tightened.



Fig. 2. Yoke slides on over end of die holder and compressor cone is turned down firmly. Result is a perfect 45° flare without scoring the tubing.

### Here's How New Imperial Hi-Duty Flaring Tool Does A Better Flaring Job . . . Faster

In place of the usual flaring bar, this unique tool has a new die holder with sliding dies for clamping the tubing. There is only one thumb screw to tighten. This greatly speeds up tube clamping. See Fig. 1.

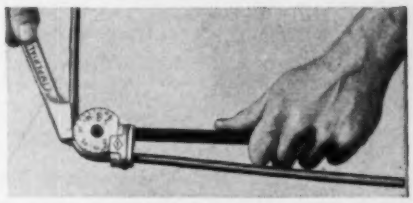
Yoke slides right over end of die holder without twisting or turning; then a few turns of the compressor screw and a precision 45° flare is made. See Fig. 2.

Due to construction of the extra depth die blocks, tubing is not scored—an advantage in making stronger flares.

This tool will flare 5 different sizes of soft copper, brass and aluminum tubing—¼", 5/16", ⅜", ½" and ⅝" O.D. It is listed as Imperial No. 300-F. Sells for $5.45.

## MAKES BENDS WHEREVER YOU WANT 'EM

These convenient open-side hand tube benders will slip over the tubing at the exact point where bend is desired. This makes them especially handy in hard-to-get-at-places where tubing has been partially connected.



They will make neat, accurate bends to a short radius to any angle up to 180°. Calibrations on bending form show degree positions.

Imperial No. 364-F Benders are furnished in 7 sizes for bending tubing 3/16" to ¾" O.D. A separate bender is used for each size. Prices range from $6.35 to $31.00.

## HANDY TOOL REAMS INSIDE AND OUTSIDE



Here is a handy tool for fast and efficient reaming on both the inside and outside edges of copper, brass or aluminum tubing. Just the thing for preparing tubing for connection. It has three hardened, hollow-ground steel cutters. It is known as Imperial No. 208-F Inner and Outer Reamer and is for use on tubing from 3/16" to 1½" O.D. Priced at $2.20.

## TUBE WORKING HANDBOOK HAS WEALTH OF INFORMATION

This practical book is a ready reference on working with tubing. Gives valuable "how-to-do-it" information on tube cutting, flaring, bending, reaming, pinch-off, soldering, swedging. Write for a copy.




**SEE YOUR INDUSTRIAL DISTRIBUTOR FOR THESE AND OTHER IMPERIAL PRODUCTS**

**The Imperial Brass Mfg. Company, 512 S. Racine Ave., Chicago 7, Ill.**

# IMPERIAL

*Pioneers in Tube Fittings and Tube Working Tools*



# Advertisers IN THIS ISSUE


A

Accurate Spring Mfg. Co. ..... 62
Acme Steel Co. ..... 252
Adam Electric Co., Frank ..... 149
Air Express Div., Railway Express Agency, Inc. ..... 315
Air Reduction Sales Co. & Subsidiaries 272
Ajax Flexible Coupling Co., Inc. ..... 262
Allegheny Ludlum Steel Corp. ..... 219
Allen Mfg. Co. ..... 154
Allied Oil Company, Inc. ..... 321
Alloy Steel Products Co. ..... 213
Aluminum Company of America
Customer Relations ..... 86
Distributors ..... 58
Fasteners ..... 251
Aluminum Goods Mfg. Co. ..... 10
American Box Co. ..... 168
American Brake Shoe Co. ..... 248
American Brake Shoe Co., National Bearing Div. ..... 167
American Brass Co., The ..... 53, 54
American Chain Div. ..... 254
American Chain & Cable Co., Inc. ....84, 186, 254, 280
American Die Casting Institute ..... 293
American Felt Co. ..... 285
American Hoist & Derrick Co. ..... 317
American Mfg. Co. ..... 155
American Optical Co. ..... 38
American Rivet Company ..... 200
American Seating Company ..... 328
American Screw Co. ..... 52
American Steel & Wire Co. ..... 169
Amgears, Inc. ..... 258
Anaconda Copper Mining Co. & Subsidiary Cos. ..... 53, 54
Anchor Post Fence Co. ..... 303
An-Cor-Lox Div., Laminated Shim Co., Inc. ..... 258
Arkwright Finishing Co. ..... 158
Armstrong-Bray & Co. ..... 298
Armstrong Bros. Tool Co. ..... 290
Associated Spring Corp. ..... 28
Atlantic Steel Company ..... 288

B

Babcock & Wilcox Co., Refractories Div. ..... 64
Baltimore & Ohio Railroad, Freight Dept. ..... 327
Barnes Co., Wallace ..... 28
Barnes Co., Ltd., Wallace, The ..... 28
Barnes-Gibson-Raymond ..... 28
Bauer & Black ..... 296
Bay State Abrasive Products Co. ..... 56
Bemis Bro. Bag Co. ..... 297
Bethlehem Steel Co. ..... 305
Billings & Spencer Co. ..... 298
Binney & Smith Co. ..... 256
Black & Decker Mfg. Co. ..... 6
Blake & Johnson Co., The ..... 243
Blaw Knox Co. ..... 165
Boston Woven Hose & Rubber Co. ..... 77
Bridgeport Brass Co. ..... 309
Briggs & Stratton Corp. ..... 302
Brighton Screw & Mfg. Co. ..... 270
Bristol Brass Corp. ..... 47
Brown & Sharpe Mfg. Co. ..... 51
Brownville Paper Co. ..... 226
BullDog Electric Products Co. ..... 257
Bundy Tubing Co. ..... 181
Bussmann Mfg. Co. ..... 48, 49

C

Carborundum Co. ..... 22, 23
Carey Mfg. Co., Philip ..... 273
Carnegie-Illinois Steel Corp. ..... 198, 199
Cel-U-Dex Corporation ..... 228
Central Paper Co. ..... 192
Century Electric Co. ..... 3
Chase Brass & Copper Co., Inc. ..... 217
Chester Hoist Div., National Screw & Mfg. Co. ..... 218
Chicago Rawhide Mfg. Co. ..... 210, 241
Chicago Rivet & Machine Co. ..... 318
Cities Service Cos. ..... 191
Clark Industrial Truck Div., Clark Equip. Co. ..... 176
Classified Advertising Section ..... 324
Cleveland Cap Screw Co. ..... 216
Cleveland Container Co., The ..... 172
Cleveland Twist Drill Co. ..... 185
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div. ..... 42
CONOVER-MAST PURCHASING DIRECTORY ..... 312
Continental Rubber Works ..... 180
Continental Screw Co. ..... 310
Corbin Screw Corp. ..... 274
Crane Co. ..... 36
Crocker-Wheeler Electric Mfg. Co. 214, 215
Cullman Wheel Co. ..... 280
Curtis Pneumatic Machinery Div., Curtis Mfg. Co. ..... 65

D

Darnell Corp., Ltd. ..... 290
Detecto Scales, Inc. ..... 319
Detex Watchclock Corp. ..... 304
Detrex Corp. ..... 318
Disston & Sons, Inc., Henry ..... 175
Doehler-Jarvis Corp. ..... 259
Dravo Corp. ..... 290
Dunbar Bros. Co. Div. ..... 28
du Pont de Nemours & Co. (Inc.), E. I., Plastics Dept ..... 295

E

Eagle-Picher Sales Co., The ..... 278
Eaton Mfg. Co. ..... 66
Eberhard-Faber Pencil Co. ..... 231
Edmont Mfg. Co. ..... 172
Elastic Stop Nut Corp. of America ..... 205
Elco Tool & Screw Corp. ..... 196
Electric Auto-Lite Co. ..... 177
Electric Storage Battery Co. ..... 287
Electric Wheel Co. ..... 328
Emerson Electric Mfg. Co. ..... 57
Equitable Paper Bag Co. ..... 233
Erie Bolt & Nut Co. ..... 262
Esleeck Mfg. Co. ..... 233
Etching Co. of America ..... 265
Ex-Cell-O Corporation ..... 71

F

Federal Bearings Co., Inc. ..... 311
Federal Products Corporation ..... 250
Federated Metals Div., American Smelting & Refining Co. ..... 60
Flexible Steel Lacing Co. ..... 256
Foote Bros. Gear & Machine Corp. ..... 80
Forest City Foundries Co. ..... 314
Formica Co., The ..... 178
Frasse & Co., Peter A. ..... 323
Fuller Brush Co. ..... 286
Fyr-Fyter Company ..... 255

G

Gair Company, Inc., Robert ..... 277
Garrett Co., Inc., George K. ..... 298
Gates Rubber Co. ..... 301
Gaylord Container Corp. ..... 307
General Box Co. ..... 160
General Electric Company
Apparatus Div. ..... 163, 164, 194
Construction Materials Div. ..... 211
Industrial Laminates ..... 239
Industrial Vacuum Cleaners ..... 300
Lamp Div. ..... 171
Gerson-Stewart Corporation ..... 194
Geuder, Paeschke & Frey Co. ..... 279
Gibson Co., William D., The ..... 28
Gits Bros. Mfg. Co. ..... 250
Gits Molding Corp. ..... 162
Goodrich Co., B. F. ..... 4
Goodyear Tire & Rubber Co., Inc. ..... 69
Gould Storage Battery Corp. ..... 235
Gravely Motor Plow & Cultivator Co. ..... 162
Graybar Electric Co., Inc. ..... 82
Great Lakes Steel Corp. ..... 147
Grinnell Co., Inc. ..... 179

H

Hanson-Van Winkle-Munning ..... 178
Hanson-Whitney Machine Co. ..... 209
Hassall, Inc., John ..... 317
Hinde & Dauch Paper Co. ..... 41
Hodell Chain Co.—Div. National Screw & Mfg. Co. ..... 321
Holliston Mills, Inc., The ..... 276
Hood Rubber Co. ..... 288
Howell Electric Motors Co. ..... 281
Hudson Pulp & Paper Corporation ..... 264
Hussey & Co., C. G. ..... 26

I

Imperial Brass Mfg. Co. ..... 325
Inland Steel Co. ..... 5
International Nickel Co. ..... 33
International Paper Co. ..... 220
International Staple & Machine Co. ..... 308

J

Jenkins Bros. ..... 4th Cover
Johns-Manville Corp. ..... 161
Johnson Bronze Co. ..... 202
Johnson Steel & Wire Co., Inc. ..... 276

K

Kano Laboratories ..... 212
Kearney & Trecker Corp., Walker-Turner Div. ..... 246, 247
Keasbey & Mattison Co. ..... 76
Kex National Service ..... 170
Keystone Steel & Wire Co. ..... 261
Kimberly-Clark Corp. ..... 318

L

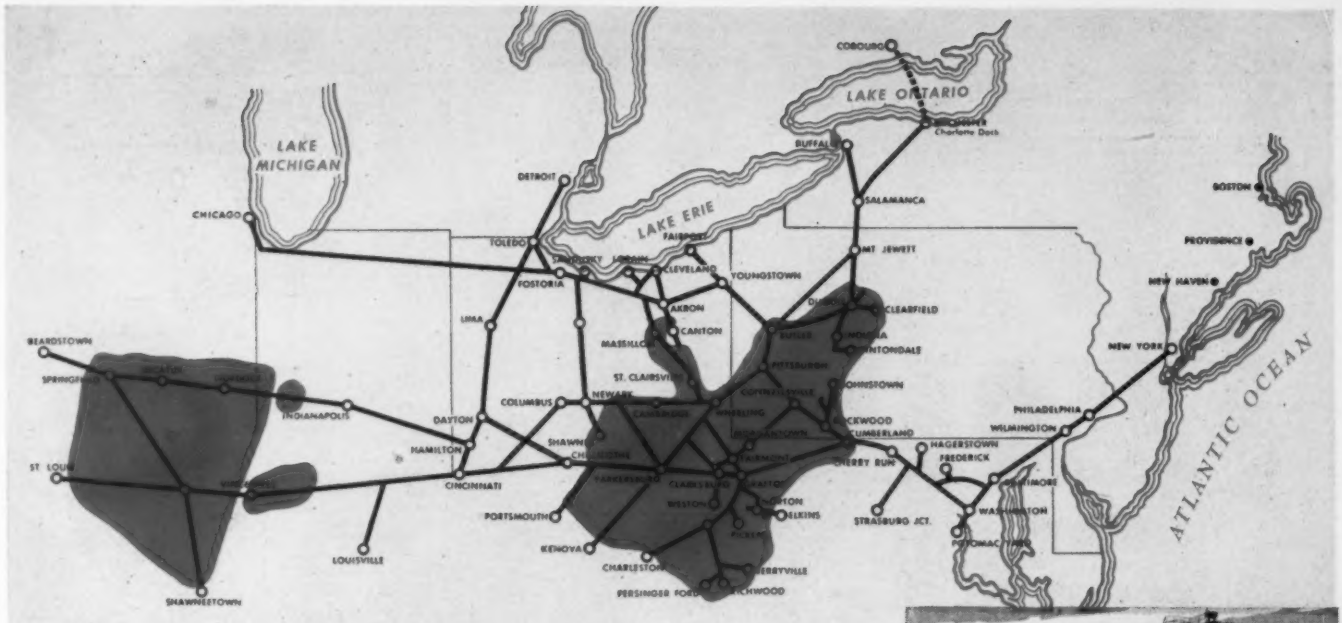
Laminated Shim Co., Inc., An-Cor-Lox Div. ..... 258
Lamson & Sessions Co. ..... 187
Leschen & Sons Rope Co., A. ..... 63
Lewis Spring & Mfg. Co. ..... 320
Lincoln Engineering Co. ..... 260
Link-Belt Co. ..... 11
Lunkenheimer Co. ..... 156
Lyon Metal Products, Inc. ..... 31

M

Macwhyte Co. ..... 17
Mack Molding Co. ..... 320
Marsh Corp., Jas. P. ..... 330
Master Electric Co. ..... 201
Mechanical Rubber Products Co. ..... 266
Merz Engineering Co. ..... 174
Mesta Machine Co. ..... 45
Milford Rivet & Machine Co. ..... 278
Millers Falls Co. ..... 253
Milwaukee Dustless Brush Co. ..... 190
Missouri-Kansas-Texas Lines ..... 70
Monsanto Chemical Co. ..... 151
Moore Business Forms, Inc. ..... 225
Morris Company, Bert M. ..... 233

N

National Bearing Div., American Brake Shoe Co. ..... 167
National Blank Book Company ..... 223
National Paper Box Manufacturers Association ..... 237
National Sanitary Supply Assn. ..... 268
National Screw & Mfg. Co. ..... 218, 321
Nicholson File Co. ..... 13
Norton Co. ..... 182, 183





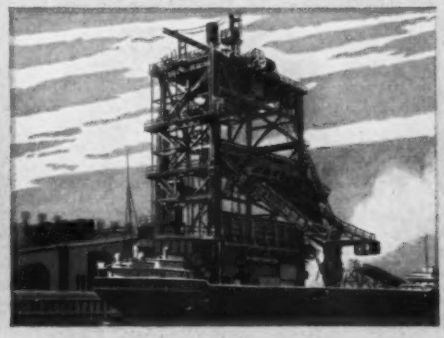

HOWLAND HOOK, Staten Island, N. Y.

# *Coal is where you find it...*

## but economical B & O coals are within easy reach of the industries that need them



COAL FACILITIES, Toledo, Ohio



COAL FACILITIES, Lorain, Ohio.



CURTIS BAY, Baltimore, Md.

This map should interest you. Note where the vast Bituminous deposits on the Baltimore & Ohio lie —then observe the strategic position of B&O rails serving the heart of industrial America. This is accessibility—the plus that means economy when you buy coals on the B&O!

Through the great B&O ports of Lorain, Toledo, Fairport, and Buffalo on Lake Erie, and Charlotte on Lake Ontario, consumers in all the Great Lakes region and in Canada have access to B&O Bituminous. Terminals accessible to B&O at New York and Philadelphia, as well as B&O's own tidewater terminals at Curtis Bay, Baltimore, and Howland Hook, Staten Island, N. Y., place this coal on the doorsteps of Atlantic Coast consumers.

Because *Bituminous is basic*, B&O has spent more than $80,000,000 in the last three years to improve system-wide facilities for bituminous distribution. Wise consumers with an eye to efficiency, economy, wide variety, and vast reserves, "bank on B&O Bituminous." *Ask our man!*

BITUMINOUS COALS FOR EVERY PURPOSE

# BALTIMORE & OHIO RAILROAD

LINKING 13 GREAT STATES WITH THE NATION — B&O ®

Constantly *doing things* — better!

O

Oakite Products, Inc. ..... 308
Ohio Brass Company ..... 8
Ohio Div., Association Spring Corp. .... 28
Ohio Injector Co., The ..... 24
Okonite Co. ..... 304
Osborn Mfg. Co. ..... 7
Oxford Filing Supply Co. ..... 230

P

Page Fence Association ..... 268
Page Steel & Wire Div. ..... 280
Parker-Kalon Corp. ..... 34
Pawtucket Mfg. Co. ..... 166
Peck Spring Co. ..... 212
Pennsylvania Flexible Metallic Tubing Co. ..... 59
Perkins Machine & Gear Co. ..... 306
Permanente Metals Corp. ..... 329
Phillips Pump & Tank Co. ..... 200
Powell Co., William ..... 275
Pratt & Whitney, Div., Niles-Bement-Pond Co. ..... 32
PURCHASING Magazine ..... 299

R

Railway Express Agency, Inc. ..... 292
Railway Express Agency, Inc., Air Express Div. ..... 315
Rathborne, Hair & Ridgway Co. ..... 55
Raymond Mfg. Co. ..... 28
Reliance Electric & Engineering Co. 188, 189
Republic Rubber Division ..... 50
Republic Steel Corp. ..... 291
Revere Copper & Brass Inc. ..... 240
Reynolds Metals Company ..... 207
Richardson Co., The ..... 30
Ridge Tool Co. ..... 294
Riegel Paper Corp. ..... 44
Riegel Textile Corp. ..... 9
Rising Paper Co. ..... 230
Roebling's Sons Co., John A. ..... 39, 46
Rolock, Inc. ..... 267
Russell, Burdsall & Ward Bolt & Nut Co. ..... 61
Ryerson & Son, Inc., Joseph T. ..... 88

S

Sandvik Steel, Inc. ..... 271
Schnell Publishing Co. ..... 262
Seymour Mfg. Co., The ..... 289
Sheffield Tube Corporation, The ..... 313
Sheldon Machine Co., Inc. ..... 304
Shell Oil Company ..... 159
Shenango-Penn Mold Co. ..... 15
Sheppard Envelope Co. ..... 231
Simonds Gear & Mfg. Co. ..... 204
SKF Industries, Inc. ..... 78
South Bend Lathe Works ..... 204
Speed Products Co., Inc. ..... 229
Spengler-Loomis Mfg. Co., Automatic Pencil Sharpener Div. ..... 232
Sponge Rubber Products Co. ..... 197
Square D Company ..... 21
Standard Pressed Steel Co. ..... 208
Stanley Works, The ..... 192
Starrett Co., The L. S. ..... 37
Sterling Bolt Co. ..... 29
Sterling Wheelbarrow Co. ..... 288
Strom Steel Ball Co. ..... 266
Stuart Oil Co., Ltd., D. A. ..... 184
Sun Oil Co. ..... 283
Superior Foundry, Inc. ..... 242
Sylvania Electric Products, Inc. ..... 72, 73

T

Taylor Forge & Pipe Works ..... 263
Texas Co. ..... 2nd Cover
Thermoid Co. ..... 203
Thompson & Son Co., Henry G. ..... 206
Tide Water Associated Oil Co. ..... 269
Timken Roller Bearing Co. ..... 193
Townsend Company ..... 43
Travellers Premium Company ..... 231
Tri-Lok Company ..... 290
Tube-Turns, Inc. ..... 173

U

Udylite Corp. ..... 75
Underwood Corp. ..... 227
Union Bag & Paper Corp. ..... 35
U. S. Steel Supply Co. ..... 18, 166

V

Valley Electric Corp. ..... 321
Veeder-Root, Inc. ..... 40
Victor Saw Works, Inc. ..... 184
Vonnegut Moulder Corp. ..... 264

W

Waldes Kohinoor, Inc. ..... 195
Waldron & Co., Inc. ..... 312
Walker-Turner Div., Kearney & Trecker Corp. ..... 246, 247
Walworth Co. ..... 74
Ward Steel Company ..... 249
Weirton Steel Co. ..... 79
Weldon Roberts Rubber Co. ..... 232
West Disinfecting Co. ..... 25
Westinghouse Electric Corp. ..... 3rd Cover
Wheeler Reflector Co. ..... 157
Whitlock Cordage Co. ..... 292
Whitney Chain & Mfg. Co. ..... 245
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. ..... 42
Willson Products, Inc. ..... 244
Witt Cornice Co. ..... 319
Wittek Mfg. Co. ..... 270
Worthington Pump & Machinery Corp. ..... 27, 81
Wright Hoist Div. ..... 84
Wrought Washer Mfg. Co. ..... 208

Y

Youngstown Sheet & Tube Co. ..... 153



# ELECTRIC WHEELS

## Designed to do the Job



Wheels and Axles are our business, and our engineers are well qualified to recommend the most efficient assembly for your product.

Our factory is modern and tooled for low cost production. We have supplied manufacturers in many different industries for more than 50 years.

Standard or Special, ELECTRIC Spoke-type or Disc Wheels are built for most types of portable equipment.

Send us your specifications and we will submit our recommendations.



ELECTRIC WHEEL CO., 2913 Pine, Quincy, Ill.

# Safe, Handy, Quiet FOLDING CHAIR



**American Folding Chair No. 43**

Formed steel seat and back. Triangular reinforced tubular steel frame; solid-steel cross braces. Dipped, baked-enamel finish. Replaceable rubber feet.

For every industrial need—in cafeterias, recreation rooms, or assembly rooms—this is the perfect folding chair! Safe—can't tip in use. No snagging, pinching, or soiling hazards. Folds quickly and quietly. Light and compact, easy to carry and store. Easy on the budget, too. Write for full information.

**Also with wood seat**—American Folding Chair No. 44, same advantages plus five-ply, urea-resin-bonded hardwood seat, durably lacquered. (And No. 47, upholstered in brown imitation leather.)

*American Seating Company*

WORLD'S LEADER IN PUBLIC SEATING

Grand Rapids 2, Michigan

Branch Offices and Distributors in Principal Cities

# Whether your product pops corn...

**OR MAKES COFFEE, OR STOWS SPICES, OR WHATEVER...**




**THIS IS THE POPEX**—made by Popex, Inc., Cincinnati, Ohio. Brain child of Mr. Glenn T. Schmidt and Mr. E. G. Beckemeyer, it is designed for popcorn eaters who like their home appliances attractive, economical, efficient. Special sizes of coiled sheet and circles are carried in stock for Popex by the Kaiser Aluminum Distributor in Cincinnati.

Your nearby Kaiser Aluminum Distributor will stock *your* warehouse requirements of Kaiser Aluminum. In addition, he'll help you work out a program to make your inventory more versatile, your raw materials investment lower, your handling costs less, your space requirements smaller.

He can provide *any* warehouse quantity of light, strong, rust-proof Kaiser Aluminum: Large orders for making mass-produced items—or smaller orders for fill-in items or for just-getting-started products and experimental work.

He's ready, too, to give you expert engineering help, if you want it. His service is the kind that's made him one of the nation's leading materials suppliers.

You'll find the name of your nearest Kaiser Aluminum Distributor listed below. Call him now. You'll learn there are *many* ways he can help you!

**Permanente Metals**

PRODUCER OF

**Kaiser Aluminum**

***FOR WAREHOUSE QUANTITIES, CALL YOUR LOCAL KAISER ALUMINUM DISTRIBUTOR***

**ATLANTA, Georgia**
Morrison-Drabner Steel Co.
82-84 Milton Avenue
Alpine 4885

**BALTIMORE, Maryland**
The Hill-Chase Steel Company of Maryland
6311 Erdman Avenue
Peabody 7300

**CINCINNATI, Ohio**
Morrison-Drabner Steel Co., Inc.
1074-1084 Summer Street
Wabash 4480, 4481

**CLEVELAND, Ohio**
Nottingham Steel Company
West 45th St. & Division Ave.
Atlantic 5100

**DETROIT, Michigan**
Cauhorn Distributing Company
9999 Broadstreet
Hogarth 3858

Copper & Brass Sales, Inc.
3000 East Woodbridge
Lorain 7-3380

**EVANSTON, Illinois**
Korhumel, Heffron & Preiss Steel Co.
2424 Oakton Street
Ambassador 2-6700

**FRESNO, California**
Clingan & Fortier, Inc.
1960 H Street
Phone 2-2164

**INDIANAPOLIS, Indiana**
F. H. Langsenkamp Company
229 East South Street
Riley 9311

**KANSAS CITY, Missouri**
Robbins-Benson Corporation
403 East 18th Street
Victor 1041 or Victor 1042

**LOS ANGELES, California**
Permanente Products Company
Warehouse Division
551 East Macy Street
Mutual 7286

**MILWAUKEE, Wisconsin**
KHP Milwaukee Steel Company
1550 South First Street
Evergreen 3-5800

**MINNEAPOLIS, Minnesota**
Korhumel, Heffron & Preiss Steel Co.
3225 Como S. E.
Gladstone 5943

**NEW ORLEANS, Louisiana**
The Orleans Steel Products Co., Inc.
1019-1025 Bienville Street
Raymond 2116

**NEW YORK, Metropolitan Area**
A. R. Purdy Company, Inc.
Page Avenue & Orient Way
Lyndhurst, New Jersey
**Lyndhurst:** Rutherford 2-8100
**New York:** Chelsea 3-4455
**Newark:** Humboldt 2-5566

**OAKLAND, California**
Gilmore Steel & Supply Company
1960 Cypress
Glencourt 1-1680

Permanente Cement Company
1924 Broadway
Twinoaks 3-4600
(Handles Territory of Hawaii)

**OMAHA, Nebraska**
Gate City Steel Works
11th and Seward
Atlantic 1830

**PHILADELPHIA, Pennsylvania**
Hill-Chase & Company, Inc.
Trenton Ave. & Ontario St.
Delaware 6-5400

**PHOENIX, Arizona**
Arizona Hardware Co.
47 E. Jackson Street
Phone 3-3111

**PORTLAND, Oregon**
Eagle Metals Company
809 Dekum Building
Atwater 4962

**SAN FRANCISCO, California**
Clingan & Fortier, Inc.
1526 Wallace Street
Mission 7-0206

Gilmore Steel & Supply Company
840 Brannan Street
Klondike 2-0511

**SEATTLE, Washington**
Eagle Metals Company
3628 East Marginal Way
Eliot 4764

**SPOKANE, Washington**
Eagle Metals Company
E. 41 Gray Street
Main 2419

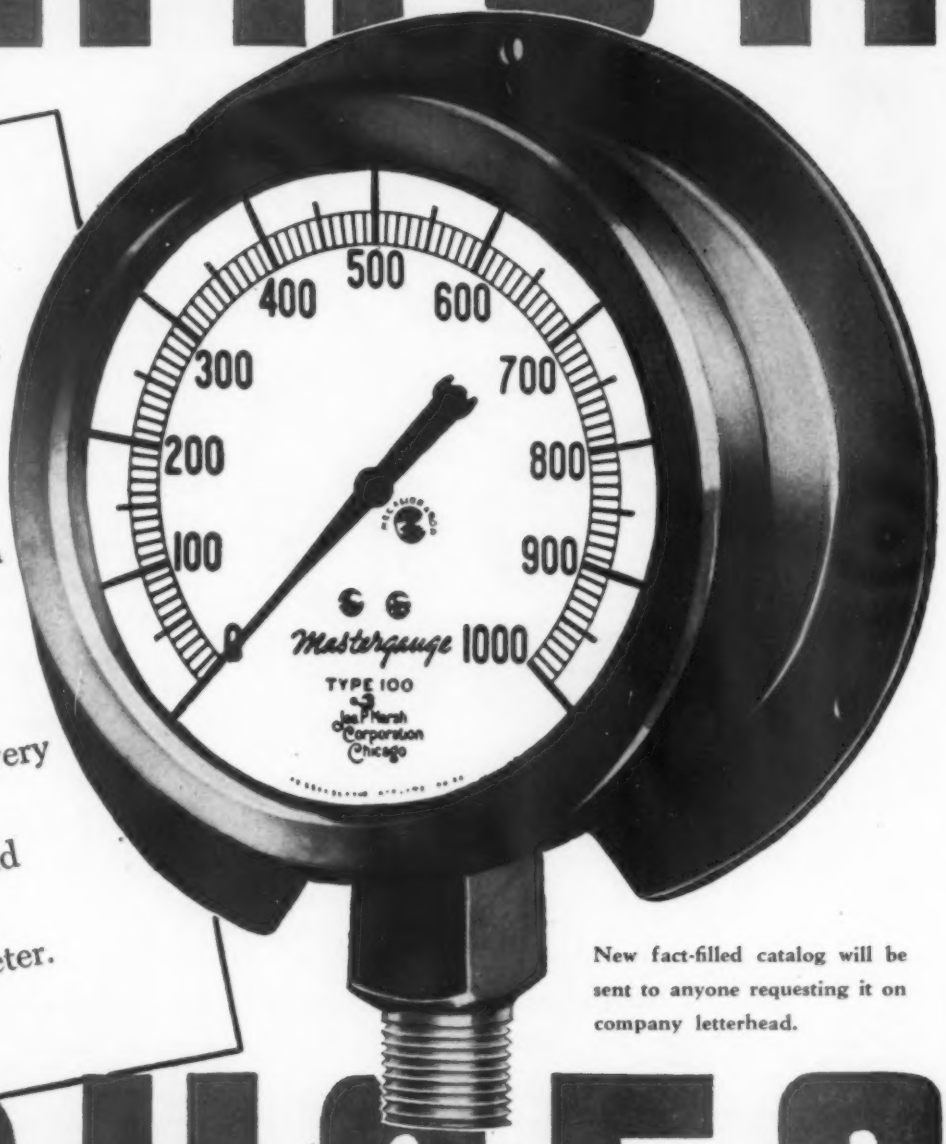
**WICHITA, Kansas**
General Metals Mfg. Co., Inc.
218-220 South Wichita
3-4314, 3-2373

PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND, CALIFORNIA • OFFICES IN MAJOR CITIES


*Want Additional Product Information? See Page 19.*

# MARSH

All that we have learned in 80 years of precision instrument making stands before you in the design and construction of every Marsh Gauge and Dial Thermometer.




New fact-filled catalog will be sent to anyone requesting it on company letterhead.

# GAUGES

**JAS. P. MARSH CORPORATION • DEPT. G, SKOKIE, ILLINOIS**

Jas. P. Marsh products include a full line and range of gauges in pressure, compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. Ask for literature.

YOU CAN BE **SURE**.. IF IT'S

# Westinghouse

## MOTOR EXCHANGE SERVICE

For Westinghouse
single-phase and three-phase
1 to 20 hp
frame 203 to 326 a-c motors



# *Another Life-Line First!*

## The Broadest Exchange Plan!

Since February, 1949, Life-Line motors have offered you the broadest exchange plan in industry. All 1 to 20-hp, single-phase and three-phase a-c motors in frame 203 to 326 are included. No other manufacturer of motors—large or small—provides exchange service that compares in scope to this new Life-Line Motor Exchange Service.

*120 Westinghouse exchange points* assure you rush motor replacement service anywhere in the United States. Replacement motors, covered by this plan, are in stock, ready to be speeded to you at any time.

And what's more, if a motor fails during warranty period, it may be exchanged *free* for a motor of identical rating. The *exchange price,* beyond warranty, *is not dependent on the time in service . . . one year, five years or ten years.*

This service is one more advantage you get with Life-Line motors. Add this to all-steel construction . . . pre-lubricated bearings . . . an indicated savings of $750 per year per 100 motors . . . and you'll see why Life-Line has gained leading acceptance in the motor industry.

Complete details on the Life-Line Exchange Service—lists of exchange points and motor ratings covered—are given in the new booklet SM-5243. Get your copy today from your nearby Westinghouse representative or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-21533

**Westinghouse**
***Life-Line***
**Motors**




In plants handling corrosive liquids, or fluids that must be kept free from contamination or discoloration, Stainless Steel Valves must be not only the right *type*, but fabricated of the *proper* alloy for the service.

To keep production at peak, and down-time for repairs and replacements to a minimum, alert management chooses Jenkins Stainless Steel Valves. Built to the same quality standard which has made "Jenkins" the preferred industrial valve, Jenkins Stainless Steel Valves are available in a range of sizes to meet almost any service requirement.

Equally important, however, is Jenkins Engineering Service. Providing information you need to select the alloy or type of valve which will render the best service (based on analysis of specific information about the valve installation), Jenkins engineers can be of valuable assistance.

Send the coupon today for the new folder describing the complete line of Jenkins Stainless Steel Valves. It includes specifications and helpful data on selection.

Jenkins Bros., 80 White St., New York 13; Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago; San Francisco. Jenkins Bros., Ltd., Montreal.

***Sold through leading Industrial Distributors***




**JENKINS BROS.**
80 White Street, New York 13, N. Y.
***Please send Stainless Steel Valve Folder — Form 194.***

NAME_____

COMPANY_____

ADDRESS_____

# JENKINS VALVES

LOOK FOR THE DIAMOND MARK

SINCE 1864 — TRADE JENKINS MARK